

# **Economics Background Document**

## **Estimate of Potential National Economic Impact for the USEPA's Proposed Revisions to the 1981 "*Headworks Exemption*" of the RCRA Hazardous Waste Mixture Rule for Industrial Wastewater Treatment Systems**

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# Preface

This background document presents USEPA's estimates of the potential national economic impacts of the Office of Solid Waste's proposed revisions to the 1981 RCRA hazardous waste mixture rule "*headworks exemption*" (Federal Register, Vol. 46, No. 221, 17 Nov 1981, pp. 56582-56589, and 40 CFR 261.3(a)(2)(iv)(A-E)). In general, this exemption applies to certain types of industrial wastewaters managed in wastewater treatment systems which meet certain influent and other conditions.

For purposes of reducing unnecessary duplication and reader burden with the text of the Federal Register announcement and other background documents for the proposed rule, this document does not reproduce descriptive information about the regulatory features of the proposed rule. Consequently, the format of this document consists of tables, graphs, and spreadsheets containing numerical data, computations, and analytic findings, organized according to **five impact components** of the proposed rule:

!	Spent Solvents:	Add two F005 spent solvents (i.e. benzene & 2-ethoxyethanol) to the headworks exemption for the RCRA headworks mixture rule.
!	Scrubber Waters:	Provide " <i>headworks exemption</i> " for F001 to F005 spent solvent hazardous waste combustion scrubber wastewaters.
!	Direct Monitoring:	Allow " <i>direct monitoring</i> " of F001 to F005 spent solvent waste concentrations in headworks influent wastewaters for exemption compliance, in lieu of " <i>mass balance</i> " computations.
!	De Minimis:	Revise the RCRA hazardous waste " <i>de minimis</i> " exemption to include RCRA F- and K-listed wastes.
!	De Minimis:	Revised the RCRA hazardous waste " <i>de minimis</i> " exemption to include non-manufacturing facilities.

The economic impact estimates presented in this document are based upon either **detailed deterministic** or **non-detailed factoring** computation methods, using an assortment of secondary data sources identified as references throughout this document. There is variability and uncertainty in the "*typical*" numeric values for some deterministic factors applied in this document, because many factors exhibit skewed (i.e. non-bell shaped) numerical distributions. In contrast to bell-shaped data distributions which exhibit convergence in alternative central tendency measures which may be applied as indicators of "*typical*" values (i.e. mean or average, median, mode, and distribution midpoint), skewed data distributions exhibit divergence in central tendency measures. Consequently, there is some inherent uncertainty and inaccuracy in the deterministic economic impact estimates presented in this document. Readers should interpret the impact findings presented in this document (i.e. estimated count of potentially affected facilities, estimated annual quantities of affected RCRA hazardous wastes, and estimated national waste management baseline costs and potential waste management cost savings from the proposed rule), as "*most-likely*" estimates. However, there is a non-quantified probability that the actual impacts of the proposed rule (if finalized as is), may be less than or greater than presented in this document.

It is also important to note that although this document contains annual waste quantity data from sets of specific facilities which reported to USEPA (as of 1997) generation and management of RCRA-hazardous F002 and F005 aqueous spent solvent wastes and related combustion scrubber waters, all of these identified facilities may not be eligible for the proposed headworks exemptions because: (a) the facilities may no longer generate and manage these types of RCRA-hazardous wastes, or (b) the facilities may not meet the conditions for the proposed exemptions. USEPA welcomes public review and comment on the data, factors, computations, and findings contained in this background document (refer to the Federal Register announcement for the proposed rule for instructions on how to submit public comments).

## Table of Contents

<u>Section</u>	<u>Page</u>
I: Summary of Estimated Economic Impacts .....	4
II: Economic Impact Estimation Table .....	7
III: Sensitivity Analyses .....	15
! Future growth in industrial solvent use	
! Headworks direct monitoring frequency	
IV: Supplementary Computation Tables & Spreadsheets .....	21
IV.A: Regulatory Revision #1: Benzene & 2-Ethoxyethanol F005 spent solvents .....	22
IV.B: Regulatory Revision #2: Scrubber wastewaters generated by F001 to F005 spent solvent combustion units .....	123
IV.C: Other Computation Tables .....	143
V: Unit Costs & Other Computation Factors Applied in This Study .....	145

**Section I**

**Summary  
of  
Estimated Economic Impacts**

<b>Summary of USEPA's Estimated Potential National Economic Impacts For Proposed Revisions to the 1981 "Headworks Exemption" for Industrial Wastewaters of the RCRA Hazardous Waste Mixture Rule (40 CFR 261.3(a)(2)(iv)(A-E))</b>					
Item	Proposed Regulatory Revision to RCRA "Headworks Exemption"	Count of Potentially Eligible Industrial Facilities	Annual Quantity of Potentially Affected (Eligible) RCRA Hazardous Waste (tons/year)	Estimate of Economic Impact to Industry (2000\$)	
				Average Annual Cost Savings (\$/year)	Unitized Savings (\$/ton)
1	Add two F005 spent solvents (benzene & 2-ethoxyethanol) to the headworks exemption*	115 to 1,800 facilities	0.036 to 0.594 million tons/year spent solvent wastes (aqueous & non-aqueous forms)	\$0.32 to \$5.65 million/year in spent solvent waste management cost savings (netting-out implementation costs)	\$8.89 to \$9.51/ton
2	Provide the headworks exemption for F001 to F005 spent solvent hazardous waste combustion "scrubber waters"	3 to 9 facilities	0.203 to 0.610 million tons/year scrubber wastewater	\$0.53 to \$1.58 million/year in scrubber wastewater management cost savings	\$2.59 to \$2.61/ton
3	Allow "direct monitoring" of F001 to F005 spent solvent at headworks, in lieu of "mass balance" computations	1,811 to 7,300 facilities	1.130 to 4.576 million tons/year spent solvent wastes (aqueous & non-aqueous forms)	\$10.09 to \$40.88 million/year in spent solvent waste management cost savings	\$8.93/ton
4	Revise RCRA hazardous waste "de minimis" exemption to include RCRA F- & K-listed wastes	71 facilities	30 tons/year spill incidents (haz waste + contaminated media or adsorbent)	\$0.026 million/year in listed hazardous waste incidental spill response cost savings	\$867/ton
5	Revise RCRA hazardous waste "de minimis" exemption to include non-manufacturing facilities	1,266 facilities	570 tons/year spill incidents (haz waste + contaminated media or adsorbent)	\$0.475 million/year in listed hazardous waste incidental spill response cost savings	\$833/ton
Column totals =		<b>3,266 to 10,446 facilities**</b>	<b>1.37 to 5.78 million tons/year</b>	<b>\$11.44 to \$48.61 million/year cost savings</b>	\$8.35 to \$8.41/ton
Present value @7% discount rate over 30-year future period*** >				\$129 to \$547 million	
Potential annual reduction in state hazardous waste fees collected (transfer effect between facilities and states, not national economic effect)**** =					\$6,000 to \$86,000/year
<b>Explanatory Notes:</b> (a) * Hypothetical expansion of the RCRA headworks exemption to include all four chemical solvents examined in the proposed rule, would likely result in addition of one wastestream with additional cost savings of about \$19,000/year (consisting of 16,800 tons/year aqueous spent solvent). (b) ** Column total facilities is an overestimate because some facilities may be potentially affected by more than one regulatory revision. (c) *** 1992 OMB guidance discount rate of 7% applied over 30-year future period-of-analysis (2004 to 2033) applied in this document to represent a medium-term analytic period. (d) **** Reduction in state hazardous waste fees collected based on: (1) disposal of derived-from sludge quantities generated from treatment of potentially affected industrial wastewaters; (2) \$26/ton national average fee for hazardous waste (sludge) disposal (see supporting data in this document), (3) estimated range of 1,736 to 5,877 gallons industrial wastewater required to generate 1.0 ton sludge, and (4) applying the sludge:to:wastewater ratio to all affected waste quantities estimated in this document.					

<b>List of Economic Subsectors</b> <b>Potentially Affected by OSW's Proposed Revisions to the</b> <b>RCRA Hazardous Waste “Headworks Exemption” for Industrial Wastewaters</b>			
	Economic Subsector or Industry Identity		
Item	SIC code	NAICS code	Description
1	02	112	Agricultural production - livestock
2	20	311	Food & kindred products
3	22	313	Textile mill products
4	24	321	Lumber & wood products
5	25	337	Furniture & fixtures
6	26	322	Paper & allied products
7	28	325	Chemicals & allied products
8	29	324	Petroleum & coal products
9	30	326	Rubber & miscellaneous plastics products
10	31	316	Leather & leather products
11	32	327	Stove, clay, glass & concrete products
12	33	331	Primary metal industries
13	34	332	Fabricated metal products
14	35	333	Industrial machinery & equipment
15	36	334, 335	Electrical & electronic equipment
16	37	336	Transportation equipment
17	38	3333, 3345	Instruments & related products
18	42	493	Motor freight transportation & warehousing
19	4581	48819, 56172	Airports, flying fields, & airport terminal services
20	4789	488999	Transportation services nec
21	49	221	Electric, gas, & sanitary services
22	50	421	Wholesale trade - durable goods
23	51	422	Wholesale trade - nondurable goods
24	5999	453998	Miscellaneous retail
25	721	8123	Dry-cleaning & industrial laundry services
26	73	514, 532, 541, 561	Business services
27	80	621, 622, 623	Health services
28	87	712	Engineering & management services
29	8999	54162	Miscellaneous services
30	91	921	Executive, legislative & general government
31	95	924, 925	Environmental quality & housing
32	97	928	National security & international affairs

(a) This list is based upon: (1) industry codes reported to the USEPA RCRA hazardous waste 1997 “Biennial Reporting System” database by F002/F005 aqueous spent solvent generators which manage such wastes onsite or offsite in wastewater treatment systems, and (2) industry codes which have USEPA Clean Water Act “Categorical Pretreatment Standards” for indirect discharge of industrial wastewaters to POTWs (as of July 2002).

(b) Office of Solid Waste matched 1987 SIC codes to 1997 NAICS codes using US Census Bureau’s website: <http://www.census.gov/epcd/naics/nsic2ndx.htm#S0>

## **Section II**

### **Economic Impact Estimation Table**

## Computations Applied for Estimating Potential National Economic Impacts for OSW's Proposed Revisions to the 1981 "Headworks Exemption" for Industrial Wastewaters

! **Introduction:** This table provides the main computations of economic impacts in this document. Other tables which follow this one provide detailed data and supplemental computations.

! **Computation Factors:** Some economic impact estimates (i.e. affected facility counts, waste quantities, cost savings) in this table represent an uncertainty range based on two alternative impact estimates. The primary source applied in this document for estimating affected facilities and waste quantities is the USEPA 1997 Hazardous Waste Biennial Report [http://www.epa.gov/enviro/html/brs/brs\\_query.html](http://www.epa.gov/enviro/html/brs/brs_query.html):

! "**Upper-Bound**": based on all facilities known to manage types of wastes potentially affected by one or more features of the headworks proposed rule.

! "**Lower-Bound**": based on smaller subset of facilities after subtracting fractions of facilities which may not meet one or more of the following:

- 88% Fraction of facilities estimated to achieve minimum break-even cost for assessing headworks concentration using "mass balance" (in comparison, 80% of facilities estimated to exceed break-even with "direct monitoring" at minimum of four samples/month). Source: calculated in spreadsheets included in this document.
- 58% Fraction of non-hazardous waste industrial surface impoundments which have waste aeration eligibility condition for benzene headworks exemption (Regulatory Revision #1). Source: data on 14 aeration methods from the USEPA Office of Solid Waste "Industrial Surface Impoundments in the United States", EPA-530-R-01-005, March 2001, <http://www.epa.gov/epaoswer/hazwaste/ldr/icr/ldr-impd.htm>.
- 40% Fraction of non-hazardous waste industrial surface impoundments have liner eligibility condition for benzene headworks exemption (Regulatory Revision #1). Source: data on liners made with eight classes of materials from the USEPA Office of Solid Waste "Industrial Surface Impoundments in the United States", EPA-530-R-01-005, March 2001, <http://www.epa.gov/epaoswer/hazwaste/ldr/icr/ldr-impd.htm>.
- 31% Fraction of industrial facilities which currently have solvent influent concentrations in industrial wastewater under 1ppm (0% to 33% of facilities) or 25ppm (8% to 43% of facilities) headworks exemption thresholds (mean for both 1ppm and 25ppm = 27%, 1 ppm benzene = 31%, which is used as single value proxy for headworks solvents in this document). Source: industrial wastewater influent concentration data in the USEPA 1999 "Toxics Release Inventory" for the four solvents considered in the headworks proposed rule (table with TRI data findings provided in this document), <http://www.epa.gov/enviro/html/tris/adhoc.html>.

! Some of the other quantitative factors applied in the computations in this table include:

- 39% Fraction of industrial facilities have Clean Water Act industrial wastewater discharge permits (unknown % of CWA permits which address headworks solvents). Source: table with reference data and computation of this factor provided in this document.
- 28% Factor applied to Regulatory Revision #5 (extending "de minimis" exemption to non-manufacturing facilities) represents the ratio of non-manufacturing to manufacturing facilities which managed onsite F- and/or K-listed RCRA hazardous wastes, based on the USEPA Office of Solid Waste 1996 "National Hazardous Waste Constituent Survey" database, based on a sample of 527 RCRA hazardous wastestreams (85.6 million tons in 1993) reported by waste management facilities which participated in the NHCWS (see item #4 on USEPA webpage <http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/economic.htm>).
- 1.7% Fraction of RCRA hazardous waste generator (LQG) facilities which report incidental releases of spent solvents into industrial wastewaters. Source: USEPA Emergency Response Notification System (ERNS) database maintained at the National Response Center <http://www.nrc.uscg.mil/index.html>.

! For regulatory revisions #1 and #3 in this table which affect spent solvents, this study defines three physical form categories of spent solvents that may be affected:

- ! AS/WWT: **Aqueous spent Solvents managed in WasteWater Treatment systems:** Facilities which currently manage headworks exemption eligible aqueous (BRS form codes = B101 and/or B201) spent solvent wastes in onsite tank-based wastewater treatment systems operating under Clean Water Act permits. With the headworks exemption, these facilities may also switch the onsite management of these wastes from tank-based system, to non-hazardous wastewater management systems (e.g. surface impoundments).
- ! AS/OM: **Aqueous spent Solvents managed in Other waste Management units:** Facilities which do not currently manage aqueous spent solvent wastes (B101 or B201) in onsite tank-based wastewater systems, but manage in other onsite types of aqueous/liquid waste management units (e.g. liquid combustion units or deepwell injection), or manifest and transport these wastes to offsite hazardous waste management facilities. With the headworks exemption, these facilities may also switch these other types of wastes, to non-hazardous wastewater management systems (e.g. surface impoundments).
- ! OLS/ANYM: **Other Liquid (inorganic & organic) forms of spent Solvents managed in ANY waste Management system:** Facilities which currently manage other liquid physical forms (i.e. BRS form codes = B202, B203 and/or B204) of spent solvent wastes, which may claim the headworks exemption by shifting their current management of non-aqueous spent solvents, to non-haz waste management systems. This category excludes other physical forms of RCRA hazardous wastes which carry spent solvent wastecodes, such as: (1) other types of liquids not defined as "solvents", (2) sludges, and (3) solids.

! **Methodology:** The main economic effect estimated in this document is the potential for affected facilities which currently manage hazardous waste, to claim the proposed exemptions and switch eligible wastes to non-hazardous waste management systems. The economic impact of this potential switch is simulated in this document as the difference in cost between RCRA-permitted hazardous waste systems, and the alternative. The waste management average unit cost (\$/ton) assumptions applied in this study are provided in spreadsheets & tables containing supporting unit cost data & computations elsewhere in this document.

Estimated Count of Potentially Affected Entities	Estimated Quantity of RCRA Hazardous Industrial Waste Potentially Affected (tons/year)	Estimated Potential Average Annual Impact (\$/year)
<b>REGULATORY REVISION #1: Revise RCRA “headworks exemption” to include additional RCRA F-listed spent solvents (two options):</b>		
<p><b>! Option #1A: Add Two Solvents</b></p> <p><b>! Potential Impact on AS/WWT</b> (aqueous spent solvents currently managed in wastewater treatment systems):</p> <p><b>! Upper-Bound:</b></p> <p>! Spent solvent wastewater treatment cost savings (if currently managed in a wastewater treatment tank system)</p> <p>! 175 RCRA hazardous waste large quantity generators (LQGs) or treatment, storage, disposal facilities (TSDFs) identified as managing 383 wastestreams of aqueous F002 or F005 spent solvent wastes in onsite or offsite wastewater treatment systems (source: 1997 BRS query using B101 &amp; B201 aqueous solvent form codes, and M071-M099, M121-M123, &amp; M133-M136 waste system codes as query criteria).</p> <p>! 110 of the 175 facilities manage F005 spent solvents (which may contain benzene or 2-ethoxyethanol according to the RCRA wastecode definition).</p> <p>! <b>25 facilities</b> of these 110 facilities (23%) are known to manage 58 wastestreams with either F005 benzene or F005 2-ethoxyethanol spent solvents, which represents an average of 2.2 wastestreams per facility (see attached spreadsheets).</p> <p><b>! Lower-Bound:</b></p> <p>! Lower-bound nets-out the following four considerations:</p> <p>! 22 of the 25 facilities (88%) estimated to exceed “mass balance” break-even cost savings threshold (80% meet “direct monitoring” break-even threshold @4 samples/month).</p> <p>! 58% of industrial surface impoundments have aerated systems</p> <p>! 40% of industrial surface impoundments have liners</p> <p>! 31% of industrial wastewater influent benzene is &lt;1ppm</p> <p>! (25 facilities) x 88% x 58% x 40% x 31% = <b>2 facilities</b></p>	<p><b>! Upper-Bound:</b> (source: 1996 NHWCS)</p> <p>! 451,000 tons/year benzene aqueous spent solvents + 27,000 tons/year 2-ethoxyethanol aqueous spent solvents = 594,000 tons/year</p> <p>! B101 + B201 aqueous solvent forms = 76.1%</p> <p>! 594,000 tons/year x 76.1% = 0.452 million tons/year (includes both AS/WWT + AS/OM)</p> <p>! For AS/WWT fraction, apply respective AS/WWT:to:AS/OM ratio from lower-bound estimates: (0.452 million tons/year) x [0.014 / (0.014+0.042)] = <b>0.113 million tons</b></p> <p><b>! Lower-Bound (source: 1997 BRS):</b></p> <p>! 51.5 million tons aqueous RCRA hazardous wastecode F002 &amp; F005 spent solvents managed in wastewater treatment systems annually (source: USEPA 1997 Hazardous Waste Biennial Report <a href="http://www.epa.gov/enviro/html/brs/brs_query.html">http://www.epa.gov/enviro/html/brs/brs_query.html</a>).</p> <p>! 0.193 million tons/year associated with the 52 wastestreams at 25 facilities known to contain F005 benzene or F005 2-ethoxyethanol and meet “mass balance” break-even cost threshold (see attached spreadsheets).</p> <p>! Represents average 8,800 tons/year per facility (0.193 million tons/year)/(22 facilities)</p> <p>! Lower-bound nets-out the following three additional considerations:</p> <p>! 58% of industrial surface impoundments have aerated systems</p> <p>! 40% of industrial surface impoundments have liners</p> <p>! 31% of industrial wastewater influent benzene is &lt;1ppm</p> <p>! (0.193 million tons) x 58% x 40% x 31% = <b>0.014 million tons</b></p>	<p><b>! Upper-Bound:</b></p> <p>! Net savings estimate for reference 25 facilities from lower-bound below, scaled-up according to respective waste ratio (0.452 / 0.193 million tons):</p> <p>(\$1.724 million/year) x (0.452/0.193) = <b>\$4.038 million/year</b></p> <p><b>! Lower-Bound:</b></p> <p>! \$1.734 million annual cost savings for wastewater management under “mass balance” break-even test (see computation spreadsheets based on BRS waste quantities in this document which net-out cost of “mass balance”).</p> <p>! Average annual savings of \$79,000 per facility [(\$1.734 million/year) / (22 facilities)].</p> <p>! Assumes that claimants with co-mingled wastecodes can segregate spent solvents.</p> <p>! Includes facilities which transport aqueous spent solvents for offsite wastewater treatment (i.e. savings may accrue in part or whole to offsite waste management facilities).</p> <p>! Exemption paperwork burden costs (for reading the rule + preparing/submitting headworks sampling plan to states + maintaining direct monitoring record) of \$412 per facility (source: 26 Sept 2002 draft of the “Information Collection Request” for the proposed rule), and of \$25 in cost to RCRA-authorized states per facility (claimant) for review of exemption claims = \$10,000 in annual implementation cost [(22 facilities) x (\$437)].</p> <p>! Net cost savings: \$1.734 - \$0.010 = \$1.724 million/year</p> <p>! To create lower-bound, scaled-down according to same three additional limiting factors applied in facility count and waste quantity estimates:</p> <p>(\$1.724 million/year) x 58% x 40% x 31% = <b>\$0.124 million/year</b></p>

Estimated Count of Potentially Affected Entities	Estimated Quantity of RCRA Hazardous Industrial Waste Potentially Affected (tons/year)	Estimated Potential Average Annual Impact (\$/year)
<p><b>! Potential impact on AS/OM:</b> (aqueous spent solvents currently managed in other types of waste management systems).</p> <p><b>! Upper-Bound:</b> ! In addition to the 110 F005 managing facilities identified above under “AS/WWT”, there are 300 facilities (LQGs) which manage F005 spent solvent aqueous wastes (BRS form codes = B101 &amp; B201) either onsite or offsite in different types of aqueous/liquid waste management systems (e.g. liquid waste combustion or liquid waste underground injection deepwells). ! Applying the same two-solvent (benzene &amp; 2-ethoxyethanol) 23% fraction from AS/WWT, produces an estimate of <b>69 facilities</b> (300 x 23%).</p> <p><b>! Lower-Bound:</b> ! Lower-bound nets-out the following four considerations: ! 88% of facilities estimated to exceed “mass balance” break-even cost savings threshold. ! 58% of industrial surface impoundments have aerated systems ! 40% of industrial surface impoundments have liners ! 31% of industrial wastewater influent benzene is &lt;1ppm ! (69 facilities) x 88% x 58% x 40% x 31% = <b>5 facilities</b></p>	<p><b>! Upper-Bound (source: 1996 NHWCS):</b> ! Residual from upper-bound above for AS/WWT: (0.452 - 0.113 million tons/year) = <b>0.339 million tons</b></p> <p><b>! Lower-Bound (source: 1997 BRS):</b> ! The upper-bound 300 facilities manage 0.181 million tons/year. ! Represents an average of 600 tons/year per facility. ! Applying the same two-solvent (benzene &amp; 2-ethoxyethanol) 23% fraction from AS/WWT, produces an estimate of 0.042 million tons/year potentially affected spent solvent waste quantity (0.181 million tons x 23%). ! Lower-bound nets-out the following four considerations: ! 88% of facilities estimated to exceed “mass balance” break-even cost savings threshold. ! 58% of industrial surface impoundments have aerated systems ! 40% of industrial surface impoundments have liners ! 31% of industrial wastewater influent benzene is &lt;1ppm ! (0.042 million tons) x 88% x 58% x 40% x 31% = <b>0.003 million tons</b></p>	<p><b>! Upper-Bound:</b> ! \$0.372 million cost savings for wastewater management (this estimate based on proportioning relative to AS/WWT, according to average affected waste quantity per facility: [(69 facilities) x (\$79,000/facility) x (600 tons/facility /8,800 tons/facility)]. ! Exemption notification paperwork burden costs (for reading the rule + preparing/submitting headworks sampling plan to states + maintaining direct monitoring record) of \$412 per facility (source: “Information Collection Request” for the proposed rule), and of \$25 in cost to RCRA-authorized states per facility (claimant) for review of exemption claims = \$30,200 in annual implementation cost (69 facilities x \$437). ! Net cost savings = \$0.372 - \$0.030 = <b>\$0.342 million/year.</b></p> <p><b>! Lower-Bound:</b> ! \$0.027 million cost savings for wastewater management (this estimate based on proportioning relative to AS/WWT, according to average affected waste quantity per facility: [(5 facilities) x (\$73,000/facility) x (600 tons AS/OM per facility) / (8,800 AS/WWT per facility)]. ! Exemption notification paperwork burden costs (for reading the rule + preparing/submitting headworks sampling plan to states + maintaining direct monitoring record) of \$412 per facility (source: “Information Collection Request” for the proposed rule), and of \$25 in cost to RCRA-authorized states per facility (claimant) for review of exemption claims = \$2,200 in annual implementation cost (5 facilities x \$437). ! Net cost savings = \$0.027 - \$0.002 = <b>\$0.025 million/year.</b></p>

Estimated Count of Potentially Affected Entities	Estimated Quantity of RCRA Hazardous Industrial Waste Potentially Affected (tons/year)	Estimated Potential Average Annual Impact (\$/year)
<p><b>! Potential impact on OLS/ANYM:</b> (other liquid forms of spent solvents currently managed in <u>any</u> type of waste management system).</p> <p><b>! Upper-Bound:</b> ! 7,435 facilities (LQGs) generate F005 spent solvent in other physical forms (i.e. in addition to the aqueous solvent form codes B101 &amp; B201; source: 1997 BRS). ! Applying the same two-solvent 23% fraction from the AS/WWT impact, produces an estimate of <b>1,710 facilities</b> (23% x 7,435) may involve F005 benzene or F005 2-ethoxyethanol spent solvents.</p> <p><b>! Lower-Bound:</b> ! Lower-bound nets-out the following four considerations: ! 88% of facilities estimated to exceed “mass balance” break-even cost savings threshold. ! 58% of industrial surface impoundments have aerated systems ! 40% of industrial surface impoundments have liners ! 31% of industrial wastewater influent benzene is &lt;1ppm ! (1,710 facilities) x 88% x 58% x 40% x 31% = <b>108 facilities</b></p>	<p><b>! Upper-Bound (source: 1996 NHWCS):</b> ! 451,000 tons/year benzene aqueous spent solvents + 27,000 tons/year 2-ethoxyethanol aqueous spent solvents = 594,000 tons/year ! other liquid solvent forms = 100%-76.1% = 23.9% ! 594,000 tons/year x 23.9% = <b>0.142 million tons/year</b></p> <p><b>! Lower-Bound (source: 1997 BRS):</b> ! The upper-bound 7,435 facilities generate 23.425 million tons/year of F005 spent solvent in other forms. ! 0.083 million tons of the 23.425 million tons/year other forms of F005 spent solvents, is other liquid solvent form (i.e. BRS formcodes = B202, B203 or B204), and not managed in recovery systems (M02x, M03x, M05x or M06x BRS system codes; this document assumes this fraction currently recovered will continue rather than switch to non-hazardous wastewater systems as a result of the headworks rule). ! Applying the same two-solvent (benzene &amp; 2-ethoxyethanol) 23% fraction from the AS/WWT impact, produces an estimate of <b>0.019 million tons/year</b> potentially affected spent solvent waste quantity (0.083 million tons x 23%).</p>	<p><b>! Upper-Bound:</b> ! <b>\$1.268 million/year</b> cost savings, based on spreadsheet cost savings reference estimated in proportion to \$1.724 million/year AS/WWT cost savings for 0.193 million tons, scaled according to relative annual waste quantities potentially affected: [(0.142 million tons/year OLS/ANYM) / (0.193 million tons/year AS/WWT) x (\$1.724 million/year AS/WWT savings)]</p> <p><b>! Lower-Bound:</b> ! <b>\$0.170 million/year</b> cost savings, based on spreadsheet cost savings reference estimated in proportion to \$1.724 million/year AS/WWT cost savings for 0.193 million tons, scaled according to relative annual waste quantities potentially affected: [(0.019 million tons/year OLS/ANYM) / (0.193 million tons/year AS/WWT) x (\$1.724 million/year AS/WWT savings)]</p>
<p><b>Option #1A subtotals:</b> ! <b>Upper-Bound: 115 facilities</b> ! <b>Lower-Bound: 1,800 facilities</b></p>	<p><b>! Upper-Bound: 0.594 million tons/year</b> <b>! Lower-Bound: 0.036 million tons/year</b></p>	<p><b>! Upper-Bound: \$5.648 million /year cost savings</b> <b>! Lower-Bound: \$0.319 million/year cost savings</b></p>
<p><b>Note:</b> Lowering the cost to facilities for using benzene as an industrial solvent by adding it to the RCRA hazardous waste mixture headworks exemption, may act as an indirect market signal which induces some facilities to switch away from using relatively higher-cost solvents, to begin using benzene as a substitute solvent. However, according to US average price data on 43 chemicals which have been used as industrial solvents (see data table attachment to this document), benzene is the lowest priced chemical (\$0.75/gallon), compared to 42 other chemicals which range in average price from \$1.11/gallon to \$6.19/gallon. Consequently, facilities which are motivated to use benzene as a solvent based its relative price rather than on its chemical properties are expected to already use it. On a unitized basis, the estimated cost savings in this table above is equivalent to a cost reduction of \$0.04 per gallon of spent solvent [(\$2.228 million/year) / (0.251 million tons) x (1 ton//2000lbs) x (8.34 lbs/gal)], including the quantity of other solvent co-contaminant materials in the waste (e.g. water). Because (a) benzene is already apparently the lowest-cost solvent chemical, and (b) the estimated unitized regulatory cost savings represents a relatively small 0.6% to 3.6% change compared to the range in price for other solvent chemicals (i.e. \$0.04/\$1.11 = 3.6%; \$0.04/\$6.19 = 0.6%), EPA does not expect many facilities to be induced to use benzene as a substitute solvent, as a result of this proposed rule.</p>		
<p><b>! Option #1B: Add Four Solvents</b> Hypothetical if all four spent solvents added to exemption (F005 benzene &amp; F005 2-ethoxyethanol &amp; F005 2-nitro-propane &amp; F002 1,1,2-TCE) ! Same types of effects as Option #1A. ! Only one additional wastestream identified as potentially eligible, relative to the count of facilities under Option #1A.</p>	<p><b>! Estimated to add 17,000 tons compared to Option #1A (a single additional wastestream identified in the 1997 BRS data).</b></p>	<p><b>! Similar level of cost savings compared to Option #1A (i.e. within +/-5% estimation uncertainty).</b></p>

Estimated Count of Potentially Affected Entities	Estimated Quantity of RCRA Hazardous Industrial Waste Potentially Affected (tons/year)	Estimated Potential Average Annual Impact (\$/year)
<b>REGULATORY REVISION #2: Revise RCRA “headworks exemption” to include F001 to F005 spent solvent hazardous waste combustion “scrubber waters”:</b>		
<p>! Wastewater treatment cost savings</p> <p>! <b>Upper-Bound:</b></p> <p>! 24 LQG facilities reported generating 45 scrubber water wastestreams (source: based on July 2002 USEPA Office of Solid Waste list of 73 facilities known to operate 119 RCRA haz waste combustion units which generate scrubber waters, and 1997 BRS database query).</p> <p>! 9 facilities report combustion of F001 to F005 spent solvents (11 wastestreams).</p> <p>! <b>Lower-Bound:</b></p> <p>! Lower-bound nets-out the following two considerations:</p> <p>! 100% of F001 to F005 scrubber wastestreams estimated to exceed “mass balance” break-even cost savings threshold.</p> <p>! 31% of industrial wastewater influent is &lt; headworks thresholds</p> <p>! (9 facilities) x 100% x 31% = <b>3 facilities</b></p>	<p>! <b>Upper-Bound:</b></p> <p>! 15.3 million tons/year all types of scrubber wastewaters reported by the reference 73 facilities (source: July 2002 OSW list – see supporting spreadsheet in this document).</p> <p>! <b>0.610 million tons/year</b> F001 to F005 scrubber wastewaters reported by the 9 facilities (based on 1997 BRS data – see supporting spreadsheets in this document).</p> <p>! <b>Lower-Bound:</b></p> <p>! Estimate based on proportioning upper-bound quantity by relative number of facilities:</p> <p>(0.610 million ton/year) x (3 facility / 9 facilities) = <b>0.203 million tons/year</b></p>	<p>! <b>Upper-Bound:</b></p> <p>! <b>\$1.582 million</b> annual cost savings (see supporting computation spreadsheets in this document).</p> <p>! Represents an average of \$198,000 savings per facility.</p> <p>! <b>Lower-Bound:</b></p> <p>! Estimate based on proportioning relative to upper-bound waste quantity: (\$1.582 million/year) x (0.203/0.610 million tons) = <b>\$0.526 million/year</b></p>
<b>REGULATORY REVISION #3: Revise the RCRA “headworks exemption” compliance monitoring method: Allow “direct monitoring” of F001 to F005 spent solvent concentrations in headworks influent wastewaters, in lieu of “mass balance” computations:</b>		
<p>! <b>Potential impacts on AS/WWT &amp; AS/OM:</b></p> <p>! <b>Upper-Bound:</b></p> <p>! About 600 facilities (LQGs) generate aqueous &amp; liquid forms of F001 to F005 spent solvents (source: 1997 BRS form codes = B101, B201, B202, B203 or B204).</p> <p>! F001 to F005 spent solvent wastes for which facilities already claim the 1981 headworks exemption are excluded from these 600 facilities, by fact that the BRS only includes RCRA hazardous wastes.</p> <p>! 94 facilities (25 + 69) already accounted for in Option #1(A) above, yields <b>506 facilities</b>.</p> <p>! <b>Lower-Bound:</b></p> <p>! Similar to the estimation method applied to the F005 solvents examined for Regulatory Revision option #1(A) in this table, the lower-bound nets-out the following two considerations:</p> <p>! 80% of facilities estimated to exceed “direct monitoring” break-even cost savings threshold.</p> <p>! 31% of industrial wastewater influent is &lt; headworks thresholds</p> <p>! (506 facilities) x 80% x 31% = <b>125 facilities</b></p>	<p>! <b>Upper-Bound:</b></p> <p>! 61.8 million tons/year of F001 to F005 spent solvents generated (1997 BRS; all waste forms &amp; all waste systems).</p> <p>! 34.9 million tons/year of aqueous F001 to F005 spent solvents (BRS codes = B101 or B201) not managed in waste recovery units (BRS system codes = M02x, M03x, M05x or M06x).</p> <p>! [(506 affected facilities) x (8,800 tons/ year/ facility from Regulatory Revision option #1(A) for AS/WWT)] = <b>4.453 million tons/year</b>.</p> <p>! <b>Lower-Bound:</b></p> <p>! Estimate based on proportioning upper-bound quantity by relative number of facilities:</p> <p>(4.453 million ton/year) x (125 facility / 506 facilities) = <b>1.100 million tons/year</b></p>	<p>! <b>Upper-Bound:</b></p> <p>! Per facility average cost of “direct monitoring” dependent upon monitoring frequency (number of samples per month).</p> <p>! At assumed minimum rate of four samples/month (minimum required for CWA discharge permit compliance), per facility average annual cost for “direct monitoring” = \$4,680/year.</p> <p>! This cost is three-times higher than the estimated \$1,440 per facility average annual cost for “mass balance” demonstration.</p> <p>! <b>\$39.777 million/year</b> potential cost savings estimated in proportion to Regulatory Revision option #1(A) AS/WWT reference cost savings, according to relative annual waste quantities potentially affected: [(4.453 / 0.193 million tons/year) x (\$1.724 million/year cost savings)].</p> <p>! <b>Lower-Bound:</b></p> <p>! Estimate based on proportioning relative to upper-bound waste quantity: (\$39.777 million/year) x (1.100/4.453 million tons) = <b>\$9.826 million/year</b></p>

Estimated Count of Potentially Affected Entities	Estimated Quantity of RCRA Hazardous Industrial Waste Potentially Affected (tons/year)	Estimated Potential Average Annual Impact (\$/year)
<p>! <b>Potential Impact on OLS/ANYM:</b></p> <p>! <b>Upper-Bound:</b></p> <p>! About 8,600 facilities generate other liquid forms (i.e. B202, B203, B204) of F001 to F005 spent solvents (source: 1997 BRS).</p> <p>! 1,800 facilities already accounted for in Regulatory Revision option #1(A) OLS/ANYM above, yields <b>6,800 facilities</b> (8,600 - 1,800).</p> <p>! <b>Lower-Bound:</b></p> <p>! Similar to the estimation method applied to the F005 solvents examined for Regulatory Revision option #1(A) in this table, the lower-bound nets-out the following two considerations:</p> <p>! 80% of facilities estimated to exceed “direct monitoring” break-even cost savings threshold.</p> <p>! 31% of industrial wastewater influent is &lt; headworks thresholds</p> <p>! (6,800 facilities) x 80% x 31% = <b>1,686 facilities</b></p>	<p>! <b>Upper-Bound:</b></p> <p>! <b>0.123 million tons/year</b> of other liquid F001 to F005 spent solvents (BRS codes = B202, B203 or B204) not managed in waste recovery units (source: 1997 BRS system codes = M02x, M03x, M05x or M06x).</p> <p>! <b>Lower-Bound:</b></p> <p>! Estimate based on proportioning upper-bound quantity by relative number of facilities:  (0.123 million ton/year) x (1,686 facility / 6,800 facilities) = <b>0.030 million tons/year</b></p>	<p>! <b>Upper-Bound:</b></p> <p>! <b>\$1.099 million/year</b> potential cost savings estimated in proportion to Regulatory Revision option #1(A) AS/WWT cost savings, according to relative annual waste quantities potentially affected: [(0.123 / 0.193 million tons/year) x (\$1.724 million/year cost savings)].</p> <p>! <b>Lower-Bound:</b></p> <p>! <b>\$0.268 million/year</b> potential cost savings estimated in proportion to Regulatory Revision option #1(A) AS/WWT cost savings, according to relative annual waste quantities potentially affected: [(0.030 / 0.193 million tons/year) x (\$1.724 million/year cost savings)].</p>
Subtotal regulatory revision #3 = <b>1,811 to 7,300 facilities</b>	<b>1.130 to 4.576 million tons/year</b>	<b>\$10.094 to \$40.876 million/year cost savings</b>
<b>REGULATORY REVISION #4: Revise RCRA “de minimis” exemption: Expand the exemption to include additional types of RCRA hazardous wastes:</b>		
<p>! Revise to include RCRA F- &amp; K-listed hazardous wastes</p> <p>! Potential economic impact modeled as difference in cost between segregating &amp; separately managing these “de minimis” releases as RCRA hazardous wastes, compared to draining or washing these releases into an onsite non-hazardous wastewater treatment system.</p> <p>! 10,670 manufacturing &amp; non-manufacturing facilities (LQGs) generate F- &amp; K-listed wastes (1997 BRS).</p> <p>! Assume 39% have CWA wastewater permits (10,670 x 39% = 4,161); (source: see supporting spreadsheets).</p> <p>! Assume 1.7% of LQGs involve incidental releases (source: ERNS database); 4,161 x 1.7% = <b>71 facilities</b></p>	<p>! 0.15 tons per RCRA waste spill incident (source: median reported to the National Response Center database for 1990-2002 – see attached spreadsheets).</p> <p>! Assume co-contaminated soil or adsorbent quantity multiplier = 3.</p> <p>! (71 facilities/year) x (0.15 tons/spill) x 3 = <b>32 tons/year</b></p>	<p>! Cost if management as RCRA haz waste:</p> <p>! \$18/ton to truck transport material</p> <p>! \$300/incident for a RCRA manifest (see attached spreadsheet)</p> <p>! \$260/ton cost** to either commercially incinerate or commercially landfill material</p> <p>! Haz cost = (((\$18/ton + \$260/ton) x 32 tons) + ((71 incidents/year) x (\$300/incident)) = \$0.030 million/year cost.</p> <p>! Cost if manage as non-haz material:</p> <p>! Average \$50 labor cost** per incident to wash into non-haz wastewater system</p> <p>! Non-haz cost = (\$50/incident x 71 incidents/year) = \$0.004 million/year cost.</p> <p>! Potential material management cost savings: (\$0.030 - \$0.004 million/year) = <b>\$0.026 million/year</b> cost savings</p>
<b>REGULATORY REVISION #5: Revise RCRA “de minimis” exemption: Expand the exemption to include additional types of facilities:</b>		

Estimated Count of Potentially Affected Entities	Estimated Quantity of RCRA Hazardous Industrial Waste Potentially Affected (tons/year)	Estimated Potential Average Annual Impact (\$/year)
<p>! Revise to include non-manufacturing facilities</p> <p>! Difference in cost between segregating &amp; separately managing these releases as RCRA hazardous wastes, compared to draining or washing these releases into an onsite non-hazardous wastewater treatment system.</p> <p>! Total of 77,444 non-manufacturing facilities with CWA wastewater permits (source: based on OSW analysis of USEPA Office of Water data presented in attached spreadsheets).</p> <p>! 2,990 non-manufacturing LQGs counted above for F- &amp; K-listed wastes (28%*** x 10,670), which produces 74,454 non-overlapping count (77,444 - 2,990)</p> <p>! Assume 1.7% involve incidental releases (same assumption as for LQGs from ERNS); 74,454 x 1.7% = <b>1,266 facilities</b></p>	<p>! Assume 0.15 tons per incident &amp; multiplier factor = 3 (from above).</p> <p>! (1,266 facilities/year) x (0.15 tons/spill) x 3 = <b>570 tons/year</b></p>	<p>! Same per incident unit cost assumptions as above.</p> <p>! Cost if manage as haz waste: \$0.538 million/year</p> <p>! Cost if manage as non haz material cost: \$0.063 million/year</p> <p>! Potential material management cost savings: (\$0.538 - \$0.063 million/year) = <b>\$0.475 million</b> annual cost savings</p>
<b>COLUMN TOTALS (Revisions #1 to #5):      Note: may include some double-counting of facilities affected by more than one of the five regulatory revision impacts monetized in this document.</b>		
Totals w/Option #1A =                      3,266 to 10,446 facilities	1.37 to 5.78 million tons/year	\$11.44 to \$48.61 million/year cost savings

## **Section III**

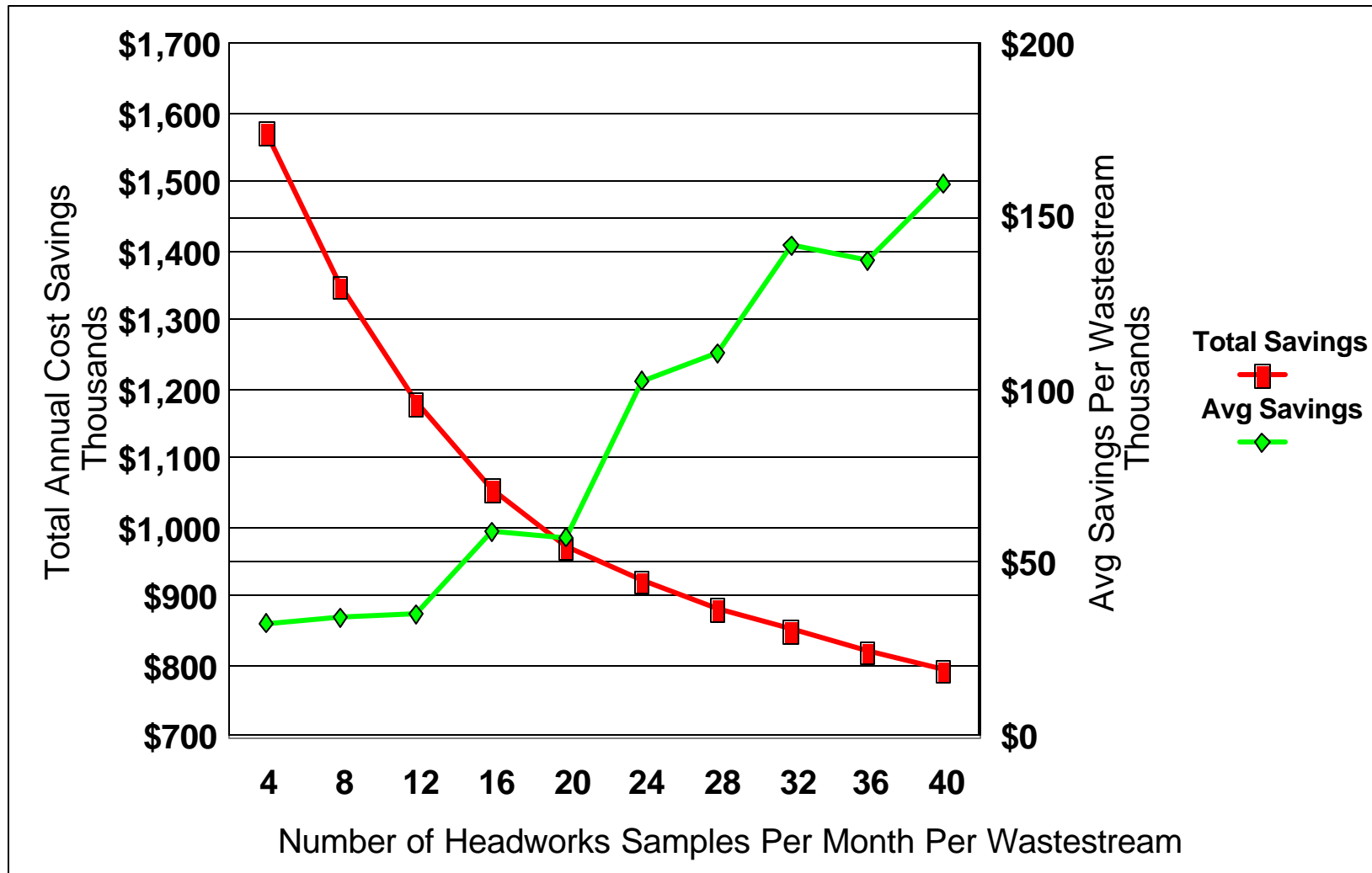
### **Sensitivity Analyses**

- ! Future Annual Growth in Industrial Spent Solvents**
- ! Headworks Direct Monitoring Frequency:**
  - F005 benzene & 2-ethoxyethanol spent solvents**
  - F001 to F005 combustion scrubber wastewaters**

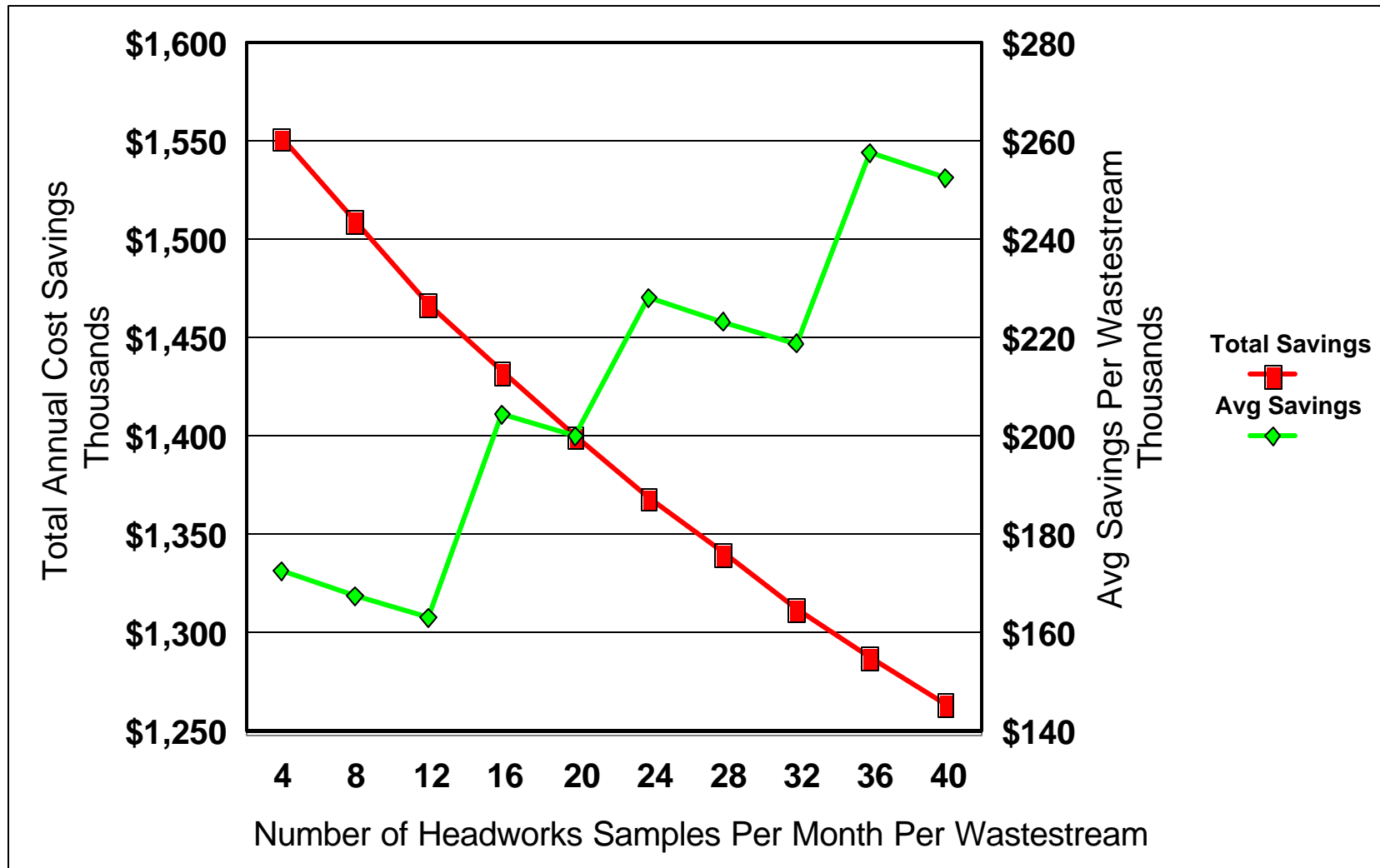
**Sensitivity Analysis: Growth in Future Annual Generation Quantities of F001 to F005 Spent Solvents  
Subject to RCRA Headworks Exemption for Industrial Wastewaters (\$millions)**

Row item	Year	Growth rate multiplier	Revision #1		Revision #2		Revision #3		Revision #4	Revision #5	Row Totals	
			Lower-bound	Upper-bound	Lower-bound	Upper-bound	Lower-bound	Upper-bound			Lower-bound	Upper-bound
1	2004	1.0000	\$0.319	\$5.648	\$0.526	\$1.582	\$10.094	\$40.876	\$0.026	\$0.475	\$11.440	\$48.607
2	2005	1.0073	\$0.321	\$5.689	\$0.530	\$1.594	\$10.168	\$41.174	\$0.026	\$0.478	\$11.523	\$48.962
3	2006	1.0146	\$0.324	\$5.730	\$0.534	\$1.605	\$10.241	\$41.473	\$0.026	\$0.482	\$11.607	\$49.316
4	2007	1.0219	\$0.326	\$5.772	\$0.538	\$1.617	\$10.315	\$41.771	\$0.027	\$0.485	\$11.690	\$49.671
5	2008	1.0292	\$0.328	\$5.813	\$0.541	\$1.628	\$10.389	\$42.069	\$0.027	\$0.489	\$11.774	\$50.026
6	2009	1.0365	\$0.331	\$5.854	\$0.545	\$1.640	\$10.462	\$42.367	\$0.027	\$0.492	\$11.857	\$50.380
7	2010	1.0438	\$0.333	\$5.895	\$0.549	\$1.651	\$10.536	\$42.666	\$0.027	\$0.496	\$11.941	\$50.735
8	2011	1.0511	\$0.335	\$5.936	\$0.553	\$1.663	\$10.610	\$42.964	\$0.027	\$0.499	\$12.024	\$51.090
9	2012	1.0584	\$0.338	\$5.978	\$0.557	\$1.674	\$10.683	\$43.262	\$0.028	\$0.503	\$12.108	\$51.444
10	2013	1.0657	\$0.340	\$6.019	\$0.561	\$1.686	\$10.757	\$43.560	\$0.028	\$0.506	\$12.191	\$51.799
11	2014	1.0730	\$0.342	\$6.060	\$0.564	\$1.697	\$10.831	\$43.859	\$0.028	\$0.510	\$12.275	\$52.154
12	2015	1.0803	\$0.345	\$6.101	\$0.568	\$1.709	\$10.904	\$44.157	\$0.028	\$0.513	\$12.358	\$52.508
13	2016	1.0876	\$0.347	\$6.143	\$0.572	\$1.721	\$10.978	\$44.455	\$0.028	\$0.517	\$12.442	\$52.863
14	2017	1.0949	\$0.349	\$6.184	\$0.576	\$1.732	\$11.051	\$44.753	\$0.028	\$0.520	\$12.525	\$53.218
15	2018	1.1022	\$0.352	\$6.225	\$0.580	\$1.744	\$11.125	\$45.052	\$0.029	\$0.524	\$12.609	\$53.572
16	2019	1.1095	\$0.354	\$6.266	\$0.584	\$1.755	\$11.199	\$45.350	\$0.029	\$0.527	\$12.692	\$53.927
17	2020	1.1167	\$0.356	\$6.307	\$0.587	\$1.767	\$11.272	\$45.648	\$0.029	\$0.530	\$12.776	\$54.282
18	2021	1.1240	\$0.359	\$6.349	\$0.591	\$1.778	\$11.346	\$45.946	\$0.029	\$0.534	\$12.859	\$54.636
19	2022	1.1313	\$0.361	\$6.390	\$0.595	\$1.790	\$11.420	\$46.245	\$0.029	\$0.537	\$12.943	\$54.991
20	2023	1.1386	\$0.363	\$6.431	\$0.599	\$1.801	\$11.493	\$46.543	\$0.030	\$0.541	\$13.026	\$55.346
21	2024	1.1459	\$0.366	\$6.472	\$0.603	\$1.813	\$11.567	\$46.841	\$0.030	\$0.544	\$13.109	\$55.700
22	2025	1.1532	\$0.368	\$6.513	\$0.607	\$1.824	\$11.641	\$47.139	\$0.030	\$0.548	\$13.193	\$56.055
23	2026	1.1605	\$0.370	\$6.555	\$0.610	\$1.836	\$11.714	\$47.438	\$0.030	\$0.551	\$13.276	\$56.410
24	2027	1.1678	\$0.373	\$6.596	\$0.614	\$1.847	\$11.788	\$47.736	\$0.030	\$0.555	\$13.360	\$56.764
25	2028	1.1751	\$0.375	\$6.637	\$0.618	\$1.859	\$11.862	\$48.034	\$0.031	\$0.558	\$13.443	\$57.119
26	2029	1.1824	\$0.377	\$6.678	\$0.622	\$1.871	\$11.935	\$48.333	\$0.031	\$0.562	\$13.527	\$57.474
27	2030	1.1897	\$0.380	\$6.720	\$0.626	\$1.882	\$12.009	\$48.631	\$0.031	\$0.565	\$13.610	\$57.828
28	2031	1.1970	\$0.382	\$6.761	\$0.630	\$1.894	\$12.083	\$48.929	\$0.031	\$0.569	\$13.694	\$58.183
29	2032	1.2043	\$0.384	\$6.802	\$0.633	\$1.905	\$12.156	\$49.227	\$0.031	\$0.572	\$13.777	\$58.538
30	2033	1.2116	\$0.387	\$6.843	\$0.637	\$1.917	\$12.230	\$49.526	\$0.032	\$0.576	\$13.861	\$58.892
Non-discounted total =			\$10.58	\$187.37	\$17.45	\$52.48	\$334.86	\$1,356.02	\$0.86	\$15.76	\$379.51	\$1,612.49
Net Present Value @7% =			\$6.81	\$120.65	\$11.24	\$33.79	\$215.62	\$873.18	\$0.56	\$10.15	\$244.38	\$1,038.32
Average Annual Equivalent =			\$0.35	\$6.16	\$0.57	\$1.72	\$11.00	\$44.55	\$0.03	\$0.52	\$12.47	\$52.97

Sensitivity Analysis							
Trade-Off Between Headworks Exemption “Direct Monitoring” Frequency/Cost for F005 Benzene & F005 2-Ethoxyethanol, and Aqueous Spent Solvent Waste Management Cost-Savings							
Headworks Direct Monitoring: Alternative Frequencies (number of wastewater samples)				58 wastestreams managed by 25 facilities known to generate and/or manage F005 benzene or F005 2-ethoxyethanol spent solvent wastestreams			
	Equivalency		Average annual direct monitoring cost* per facility (\$/year)	Percent of waste streams > breakeven	Count of waste streams > breakeven	Average annual savings per waste stream (\$/year)	National aggregate spent solvent waste management cost savings (netting-out direct monitoring cost) (\$/year)
per week	per month	per year					
1	4	48	\$4,680	84%	49	\$32,105	\$1,573,161
2	8	96	\$9,360	67%	39	\$33,809	\$1,352,341
3	12	144	\$14,040	59%	34	\$34,709	\$1,180,114
4	16	192	\$18,720	31%	18	\$58,669	\$1,056,038
5	20	240	\$23,400	24%	14	\$57,312	\$974,301
6	24	288	\$28,080	10%	6	\$102,684	\$924,152
7	28	336	\$32,760	9%	5	\$110,343	\$882,745
8	32	384	\$37,440	7%	4	\$141,980	\$851,882
9	36	432	\$42,120	7%	4	\$137,300	\$823,802
10	40	480	\$46,800	7%	4	\$159,221	\$796,106
*Assumes average unit cost per monitoring event (volatile organics method 1624) =				\$97.50			



Sensitivity Analysis							
for Scrubber Wastewater Cost Savings: Trade-Off Between Headworks Exemption “Direct Monitoring” Frequency/Cost and Potential Wastewater Management Savings for Scrubber Wastewaters from the Combustion of F001 to F005 Spent Solvents							
Headworks Direct Monitoring: Alternative Frequencies (number of wastewater samples)				58 wastestreams managed by 25 facilities known to generate and/or manage F005 benzene or F005 2-ethoxyethanol spent solvent wastestreams			
	Equivalency		Average annual direct monitoring cost* per facility (\$/year)	Percent of waste streams > breakeven	Count of waste streams > breakeven	Average annual savings per waste stream (\$/year)	National aggregate spent solvent waste management cost savings (netting-out direct monitoring cost) (\$/year)
per week	per month	per year					
1	4	48	\$4,680	90%	9	\$172,535	\$1,552,811
2	8	96	\$9,360	90%	9	\$167,855	\$1,510,691
3	12	144	\$14,040	90%	9	\$163,175	\$1,468,571
4	16	192	\$18,720	70%	7	\$204,745	\$1,433,215
5	20	240	\$23,400	70%	7	\$200,065	\$1,400,455
6	24	288	\$28,080	60%	6	\$228,334	\$1,370,002
7	28	336	\$32,760	60%	6	\$223,654	\$1,341,922
8	32	384	\$37,440	60%	6	\$218,974	\$1,313,842
9	36	432	\$42,120	50%	5	\$257,745	\$1,288,727
10	40	480	\$46,800	50%	5	\$253,065	\$1,265,327
*Assumes average unit cost per monitoring event (volatile organics method 1624) = \$97.50							



## **Section IV**

### **Supplementary Computation Tables & Spreadsheets**

**Economic Impact Estimation Tables & Spreadsheets  
for  
Proposed Regulatory Revision #1:  
Benzene & 2-Ethoxyethanol F005 Spent Solvents**

**List of Facilities Managing F002 & F005 Aqueous Spent Solvent RCRA Hazardous Wastes in Wastewater Treatment Units**  
**Data source: USEPA Office of Solid Waste 1997 "Biennial Reporting System" (BRS) RCRA hazardous waste database**

Facilities & annual waste quantities in this table identified by applying three BRS database query criteria:

Criterion #1: If wastecodes = F002 or F005: spent solvent hazardous wastes potentially involving benzene, 2-ethoxyethanol, 1,1,2-trichloroethane, or 2-nitropropane

Criterion #2: If waste physical form codes = B101 or B201: aqueous waste w/low solvent or concentrated solvent-water solution

Criterion #3: If waste management systems codes :

(3a) M071 to M099: aqueous organic and/or aqueous inorganic treatment systems, or

(3b) M121 to M123: other aqueous/liquid waste treatment systems (neutralization, evaporation, settling/clarification), or

(3c) M133 to M136: other aqueous treatment/disposal systems (surface impoundment, deepwell injection, direct discharge to sewer/POTW, direct discharge to surface water under NPDES.

Waste Stream Item	EPA_ID	RCRA BRS Waste Form Code	SIC Code	Source Code	Waste Generated (tons/year)	Onsite/ Offsite Management	Waste Management System Code	1997 Managed Tons (tons/year)	F002 or F005?	Characteristic haz waste Dxxx (other than D001 or D018)?	RCRA haz waste code count	Does Spent Solvent Carry Any of Four Chemical-Specific Wastecodes?			
												Benzene (D018 or U019)	112-TCE (U227)	2-Nitropropane (U171)	2-Ethoxyethanol (U359)
1	TND003376928	B101	2819		42,701,759.24	On site	M081	42,712,495.75	F002 & F005		5				
2	PAD003043353	B101	2833	A34	2,485,320.00	On site	M136	2,485,320.00	F002 & F005	Yes	6				
3	NYD003930849	B101	2079	A99	717,097.00	On site	M136	717,097.00	F005		1				
4	NYR000030726	B101	3364	A69		On site	M082	583,819.85	F002		2				
5	NYD059385120	B101	3679	A63	557,330.00	On site	M136	557,330.00	F002		1				
6	NYD002211324	B101	3579	A63	526,468.00	On site	M136	498,170.00	F005	Yes	8				
7	IND000806935	B101	2833	A49	443,615.51	On site	M135	443,615.51	F002 & F005	Yes	4				
8	MAD001402320	B101	3861	A09	371,025.78	On site	M135	371,025.78	F002 & F005		3				
9	ALD079109013	B101	3351	A64		On site	M083	343,704.15	F002		1				
10	GAD039046800	B101	2834	A04	303,995.00	On site	M135	303,995.00	F005	Yes	5				
11	PAD043882323	B101	3675	A69		On site	M135	208,333.20	F002	Yes	2				
12	CAD093365435	B101	3764	A64		On site	M083	207,041.70	F002 & F005	Yes	5				
13	LA4800014587	B101	3769	A31	206,022.97	On site	M136	206,022.97	F002	Yes	5				
14	CA1800090010	B101	3764	A64		On site	M083	154,952.88	F002 & F005	Yes	5				
15	IND006050967	B101	2833	A69		On site	M136	150,181.74	F002 & F005	Yes	4	X			
16	MAD058060476	B101	3861	A75	129,000.00	On site	M135	129,000.00	F002		3				
17	IND006050967	B101	2833	A37	124,053.00	On site	M136	124,053.00	F002 & F005	Yes	3				
18	NYD980592497	B101	3861	A49	105,064.13	On site	M136	105,064.13	F002 & F005	Yes	8				
19	ORD009023466	B101		A73	101,311.90	On site	M136	101,311.90	F002		1				

20	NYD980592497	B101	3861	A49	93,607.39	On site	M136	93,607.39	F002 & F005		6				
21	CAD093365435	B101	3764	A64		On site	M085	88,291.49	F002 & F005	Yes	5				
22	NCD003217437	B101	2672	A73	37,531.28	On site	M135	75,062.55	F005		1				
23	MAD001923408	B101	3669	A69		On site	M134	74,854.05	F002	Yes	2				
24	NYD002220804	B101	2869	A75	65,290.78	On site	M121	65,290.78	F002		2				
25	NYD003930849	B101	2079	A49	55,310.83	On site	M136	55,310.83	F005		2				
26	NCD051330280	B201	2824	A73	25,891.08	On site	M135	51,782.17	F005		1				
27	MAD000846493	B101	3861	A75	47,726.50	On site	M083	47,726.50	F002 & F005	Yes	5				
28	MAD001033190	B201	2824	A73	453,765.43	On site	M135	45,376.54	F005		2				
29	OKD079986568	B101	3861	A63	37,653.88	On site	M135	37,653.88	F002 & F005		2				
30	COD076470525	B101	2833	A63		On site	M085	31,097.04	F002 & F005		4	X			
31	MAD062163191	B101	3861	A31	29,372.42	On site	M135	29,372.42	F002 & F005		3				
32	NYD002211324	B101	3579	A63	526,468.00	On site	M135	28,298.00	F005	Yes	8				
33	NYD084006741	B101	3571	A63	27,442.81	On site	M082	27,442.81	F002 & F005		4				
34	NYD980592497	B101	3861	A34	23,802.89	On site	M136	23,802.89	F002 & F005	Yes	8				
35	NJD002385730	B101	2869	A73	23,656.41	On site	M094	23,656.41	F005		3				
36	NYD980592497	B101	3861	A49	22,030.66	On site	M136	22,030.66	F005	Yes	4				
37	VAD023741705	B101	3764	A69		On site	M083	19,650.00	F002		2				
38	NYD980592497	B101	3861	A49	16,823.68	On site	M136	16,823.68	F002 & F005	Yes	9		X		
39	NYD980592497	B101	3861	A49	15,494.18	On site	M136	15,494.18	F005	Yes	5				
40	KSD007482011	B101	3721	A69		On site	M135	15,072.23	F002	Yes	4				
41	MND000819268	B101	3489	A61		On site	M083	15,006.65	F002		2				
42	PAD041399403	B101	2819	A69		On site	M135	14,553.79	F005		1				
43	FL6170024412	B201	9711	A01	7,502.75	On site	M135	7,502.75	F002 & F005	Yes	5				
44	ALD003297116	B101	3695	A69		On site	M081	6,838.54	F005		2				
45	NYD986954147	B101	9999	A69	6,713.02	On site	M136	6,713.04	F002		1				
46	NYD980592497	B101	3861	A49	6,365.34	On site	M136	6,365.34	F002 & F005	Yes	6				
47	FLD046771952	B201	3721	A01	5,930.05	On site	M135	5,930.05	F002	Yes	2				
48	OKD000632737	B101	7389	A63	5,800.59	On site	M135	5,800.59	F002 & F005		5				
49	NYD041292509	B101	3579	A63	5,472.00	On site	M135	5,472.00	F005	Yes	4				
50	VAD988170445	B101	2869	A78	5,374.78	On site	M081	5,374.78	F005		2				

51	NYD002100352	B101	2542	A69	4,965.87	On site	M083	4,965.87	F002		1				
52	NYD059385120	B101	3679	A63	4,862.72	On site	M135	4,862.72	F002		1				
53	NYD980592497	B101	3861	A37	4,497.31	On site	M136	4,497.31	F002 & F005	Yes	4				
54	NYD980592497	B101	3861	A33	4,493.70	On site	M136	4,493.70	F002 & F005	Yes	9				
55	NYD980592497	B101	3861	A35	4,491.61	On site	M136	4,491.61	F005		1				
56	WAR000008979	B101		A06	4,312.61	On site	M074	4,312.61	F002 & F005	Yes	4				
57	NYD980592497	B101	3861	A32	3,670.63	On site	M136	3,670.63	F002 & F005	Yes	8				
58	NYD980592497	B101	3861	A37	3,434.63	On site	M136	3,434.63	F005	Yes	4				
59	NYD980592497	B101	3861	A32	3,403.74	On site	M136	3,403.74	F002 & F005	Yes	13				
60	COD007068646	B101	3761	A69		On site	M136	3,380.90	F002 & F005		4				
61	TXD981512122	B101	3053	A73	3,206.97	On site	M081	3,175.70	F005	Yes	3				
62	UTD009081357	B101	3761	A75	3,048.17	On site	M135	3,048.17	F002 & F005		5				
63	COD980952097	B101	9199	A65		On site	M083	2,998.35	F002 & F005		4				
64	FL6170024412	B101	9711	A22	2,849.85	On site	M135	2,849.85	F002 & F005		6				
65	CAD000030494	B101	3764	A94	2,848.37	On site	M092	2,848.37	F002 & F005	Yes	5				
66	CA1800090010	B101	3764	A64		On site	M085	2,809.84	F002 & F005	Yes	5				
67	TXD077603371	B101	0	A49	8,006.53	Off site	M134	2,800.79	F005	Yes	4				
68	NYD980592497	B101	3861	A35	2,670.81	On site	M136	2,670.81	F002 & F005	Yes	9				
69	NYD000824482	B101	2812	A51	2,095.74	On site	M135	2,095.74	F002	Yes	3				
70	NED981723513	B101	4953	A99	4,045.40	Off site	M079	2,059.99	F002 & F005	Yes	171	X		X	
71	FLD004073177	B101	3721	A29	1,968.72	On site	M135	1,968.72	F002 & F005	Yes	6				
72	GAD061022216	B101	3721	A01	1,891.66	On site	M074	1,891.66	F002	Yes	2				
73	OHD093945293	B101	4953	A73		Off site	M134	1,699.38	F002 & F005	Yes	62	X			
74	NYD980592497	B101	3861	A33	1,673.59	On site	M136	1,673.59	F005		2				
75	WA7890008967	B101		A99	1,650.44	On site	M122	1,650.44	F002	Yes	4				
76	NYD980592497	B101	3861	A78	1,591.48	On site	M136	1,591.48	F005		1				
77	CA7170090016	B101	9711	A19	1,575.92	On site	M135	1,575.92	F002	Yes	3	X			
78	NYD980592497	B101	3861	A33	1,538.73	On site	M136	1,538.73	F005		3				
79	UTD001705029	B101	3764	A36	1,522.31	On site	M135	1,522.31	F002 & F005		4				
80	NJD002385730	B101	2869	A94	1,501.20	On site	M094	1,501.20	F002 & F005		2				
81	NYD980592497	B101	3861	A49	1,419.22	On site	M136	1,419.22	F002 & F005	Yes	6	X			

82	TXD077603371	B101	0	A49	8,006.53	Off site	M094	1,293.48	F005	Yes	4				
83	NYD003930849	B101	2079	A34	1,266.14	On site	M136	1,266.14	F005	Yes	5				
84	LAD985218742	B101	3721	A75	1,251.17	On site	M135	1,251.17	F005	Yes	8				
85	MID000820381	B101	2834	A33	1,201.98	On site	M135	1,201.98	F005		2				
86	NYD980592497	B101	3861	A32	1,083.54	On site	M136	1,083.54	F002 & F005	Yes	8				
87	COD000694869	B101	2869	A09	1,000.64	Off site	M091	1,000.64	F005	Yes	4	X			
88	OKD000758599	B201	3561	A65	913.06	On site	M083	913.06	F002 & F005	Yes	7				
89	WID000808824	B101	7389	A09	1,031.77	Off site	M094	877.81	F005		1				
90	WID990829475	B101	7389	A19		Off site	M091	877.69	F005		1				
91	NYD980592497	B101	3861	A34	847.76	On site	M136	847.76	F005		2				
92	CAD000030494	B101	3764	A94	1,308.38	On site	M122	804.07	F002 & F005	Yes	5				
93	WID000808824	B101	7389	A09	1,031.77	Off site	M094	745.80	F005		1				
94	GAD003324985	B101	2833	A37	726.66	On site	M136	726.66	F005		3				
95	NYD981561962	B101	9999	A69	705.30	Off site	M085	705.30	F002	Yes	2				
96	TXD052649027	B101	7389	A89	797.57	Off site	M134	669.76	F002		4				
97	PAD030069140	B201	2869	A59	615.50	Off site	M085	615.50	F002 & F005		4				
98	OHD001926740	B101	7389	A73	811.76	Off site	M094	589.93	F002 & F005	Yes	16	X			
99	KYD053348108	B101	4953	A99	580.22	On site	M082	580.22	F002		2				
100	CAD008302903	B101	4953	A99	562.64	Off site	M079	562.64	F005		1				
101	FL6170024412	B101	9711	A22	551.57	On site	M135	551.57	F002 & F005		7				
102	NJD056356066	B101	2834	A34	3,810.83	Off site	M082	549.57	F002		3				
103	OHD980681571	B101	7389	A59	4,295.72	Off site	M094	527.51	F002 & F005	Yes	9				
104	TXD981898760	B101	3079	A75	596.00	Off site	M083	499.00	F002		1				
105	NYD980592497	B101	3861	A33	495.40	On site	M136	495.40	F005		1				
106	IND000646943	B101	9999	A99	495.02	Off site	M082	495.02	F002 & F005	Yes	29	X			
107	AZD009015389	B101	8741	A19	487.49	Off site	M081	487.49	F002	Yes	5				
108	WVD988776852	B101	3728	A01	476.17	Off site	M134	476.17	F002	Yes	4				
109	NYD980592497	B101	3861	A49	473.26	On site	M136	473.26	F002 & F005	Yes	4				
110	UTD001705029	B101	3764	A09	462.08	On site	M135	462.08	F002 & F005		4				
111	NYD003930849	B101	2079	A35	455.09	On site	M136	455.09	F005		1				
112	NYD980592497	B101	3861	A31	425.34	On site	M136	425.34	F002		1				

113	GAD003324985	B101	2833	A37	422.36	On site	M136	422.36	F005		2				
114	AZD009015389	B101	8741	A31	420.60	Off site	M134	420.60	F002 & F005		4				
115	UTD001705029	B101	3764	A09	370.11	Off site	M134	362.30	F002 & F005		4				
116	GAD033582461	B101	4953	A75	362.24	On site	M094	362.24	F002 & F005		5				
117	WAR000008979	B101		A01	357.79	On site	M074	357.79	F002 & F005	Yes	4				
118	PAD030069140	B201	2869	A59	352.90	Off site	M085	352.90	F005		5				
119	FL6170024412	B201	9711	A21	348.36	On site	M135	348.36	F002 & F005	Yes	6				
120	ILD980613913	B101	7389	A73		Off site	M134	347.28	F002 & F005		4				
121	OHD066060609	B101	7389	A99		Off site	M094	340.91	F002 & F005	Yes	24	X			
122	ILD005083316	B101	2821	A03	425.75	Off site	M094	334.44	F005		3				
123	OHD980681571	B101	7389	A19		Off site	M094	331.94	F005	Yes	4				
124	PRD090036021	B101	2834	A37	294.90	On site	M135	294.90	F002		2				
125	WID990829475	B101	7389	A73	287.73	Off site	M091	287.73	F005		1				
126	CTD064828726	B101	2869	A37	284.03	On site	M135	284.03	F005		4				
127	OHD004182408	B101	3471	A64	278.38	Off site	M094	278.38	F005	Yes	5				
128	OKD981909849	B101	4581	A21	275.93	Off site	M134	275.93	F002	Yes	2				
129	MAD000844597	B101	2899	A32	491.77	Off site	M081	275.31	F005		3				
130	WID990829475	B101	7389	A79	260.01	Off site	M091	260.01	F005		1				
131	MAR000007955	B101	2865	A31	571.38	Off site	M083	259.07	F002 & F005	Yes	5				
132	MAD980912323	B101	2869	A37	255.70	Off site	M091	255.70	F002	Yes	2				
133	RID058065707	B201	3081	A09	295.63	Off site	M081	251.17	F005	Yes	3				
134	OKD089761290	B101	9999	A01	857.79	Off site	M134	250.99	F002 & F005	Yes	211	X			
135	NYD980592497	B101	3861	A34	247.51	On site	M136	247.51	F002		3				
136	IND000646943	B101	9999	A99	242.39	Off site	M092	242.39	F002 & F005	Yes	35	X			
137	NYD002081396	B101	2834	A34	238.90	On site	M083	238.90	F005		3				
138	MND985694736	B101	3728	A06	237.01	On site	M121	237.01	F002		1				
139	WAR000008979	B101		A27	223.10	On site	M072	223.10	F002 & F005	Yes	4				
140	MAD980912323	B101	2869	A31	219.40	Off site	M091	219.40	F005		2				
141	IND085616837	B101	2869	A73	214.46	Off site	M085	199.59	F002		1				
142	ILD980613913	B101	7389	A73	4,078.52	Off site	M099	189.80	F002 & F005		4				
143	CTD001449784	B101	3721	A01	189.80	Off site	M085	185.91	F002 & F005	Yes	4				

144	MAD001402320	B101	3861	A32	185.74	Off site	M085	185.74	F002		1				
145	PAD980551964	B201	2834	A34	196.94	Off site	M081	183.09	F002 & F005	Yes	5				
146	OHD004172565	B101	2869	A94	160.09	Off site	M094	182.70	F005	Yes	6	X			
147	NYD980592497	B101	3861	A04	182.23	On site	M136	182.23	F002 & F005	Yes	6				
148	NYD980592497	B101	3861	A19	180.56	On site	M136	180.56	F005		2				
149	FL6170024412	B201	9711	A75	498.80	Off site	M134	178.07	F002 & F005		7				
150	NYD980592497	B101	3861	A32	169.72	On site	M136	169.72	F005		2				
151	PAD067362327	B101	3341	A78	160.76	Off site	M094	160.76	F002	Yes	2				
152	MAD000844597	B101	2899	A32	150.85	Off site	M081	150.85	F005		4				
153	IND000646943	B101	9999	A99	141.64	Off site	M082	141.64	F002 & F005	Yes	24	X			
154	NYD980592497	B101	3861	A37	141.10	On site	M136	141.10	F002 & F005		4				
155	NYD980592497	B101	3861	A04	135.14	On site	M136	135.14	F002 & F005	Yes	5				
156	NYD980592497	B101	3861	A09	132.51	On site	M136	132.51	F002 & F005		4				
157	CTD001840974	B101	3829	A49	162.19	Off site	M094	121.15	F002	Yes	3				
158	IND000646943	B101	9999	A99	117.79	Off site	M082	117.79	F002 & F005	Yes	18	X			
159	ILD980613913	B101	7389	A73		Off site	M134	116.50	F002 & F005		4				
160	PAD067098822	B101	4953	A89	143.75	Off site	M092	116.49	F002 & F005	Yes	15				
161	IND000646943	B101	9999	A99	115.86	Off site	M082	115.86	F002 & F005	Yes	24	X			
162	MAD000604447	B101	5093	A89	341.75	Off site	M094	115.61	F002 & F005	Yes	25	X			
163	TXD077603371	B101	0	A49	8,006.53	Off site	M134	114.51	F005	Yes	4				
164	NYD980592497	B101	3861	A37	110.46	On site	M136	110.46	F005		3				
165	KYD000770313	B101	4953	A99	108.71	Off site	M081	108.71	F005		2				
166	NCD980842132	B201	4953	A99	774.84	Off site	M085	106.31	F002 & F005		4				
167	NYD980592497	B101	3861	A32	105.39	On site	M136	105.39	F005		3				
168	NYD980592497	B101	3861	A32	103.02	On site	M136	103.02	F005		3				
169	COD160887741	B101	4581	A01	100.25	On site	M135	100.25	F002 & F005		3				
170	IND000646943	B101	9999	A99	100.23	Off site	M082	100.23	F002 & F005	Yes	18	X			
171	ILD000608471	B201	4953	A89	103.92	Off site	M085	99.52	F002		1				
172	MAD019371079	B101	4953	A04	139.98	Off site	M099	93.79	F002	Yes	7				
173	VAD982362428	B101	3577	A78	93.22	Off site	M081	93.22	F002		3				
174	ILD005083316	B101	2821	A03	425.75	Off site	M094	91.30	F005		3				

175	TXD056542749	B101	4581	A06	55.36	On site	M071	87.15	F002 & F005	Yes	4				
176	MAD980912323	B101	2869	A32	107.02	Off site	M081	85.13	F005		2				
177	PAD002311884	B101	2851	A94	82.28	Off site	M094	82.28	F005	Yes	3				
178	NYD980592497	B101	3861	A09	81.38	On site	M136	81.38	F002 & F005	Yes	7				
179	WID000808824	B101	7389	A09	1,031.77	Off site	M094	79.39	F005		1				
180	CTD055310759	B101	2819	A19	78.69	Off site	M092	78.69	F002	Yes	3				
181	MOD071987416	B101	4581	A01	253.74	Off site	M081	75.89	F002	Yes	4				
182	TXD058276130	B101	2821	A75	75.70	Off site	M134	75.70	F002 & F005		3				
183	GAD051010429	B101	2841	A31	230.45	Off site	M091	73.71	F002	Yes	5				
184	NYD980592497	B101	3861	A09	72.83	On site	M136	72.83	F005		4				
185	IND000646943	B101	9999	A99	68.55	Off site	M082	68.55	F002 & F005	Yes	16	X			
186	IND000646943	B101	9999	A99	67.35	Off site	M082	67.35	F002 & F005	Yes	26	X			
187	NYD980592497	B101	3861	A04	62.55	On site	M136	62.55	F002 & F005	Yes	5				
188	TXD052649027	B101	7389	A89	797.57	Off site	M134	60.41	F002		4				
189	CTD980668198	B101	9711	A01	136.46	Off site	M134	57.69	F002	Yes	5				
190	NJD002147023	B101	2833	A99	55.99	Off site	M089	55.99	F005		3				
191	CAD981375983	B101	7216	A73	54.42	On site	M092	54.42	F002		1				
192	FLD982102295	B101	8999	A06	52.13	On site	M135	52.13	F002		1				
193	CTD000604488	B201	4953	A89	65.01	Off site	M085	50.54	F002 & F005		24	X			
194	NYD003930849	B101	2079	A59	50.04	On site	M136	50.04	F005		1				
195	ALD983176520	B101	3721	A03	50.00	On site	M077	50.00	F005		2				
196	NYD980592497	B101	3861	A33	49.25	On site	M136	49.25	F002 & F005		3				
197	IND000646943	B101	9999	A99	49.11	Off site	M082	49.11	F002 & F005	Yes	19	X			
198	OHD066060609	B101	7389	A94	48.00	Off site	M094	48.00	F002 & F005	Yes	20	X			
199	NYD980592497	B101	3861	A99	46.91	On site	M136	46.91	F005		1				
200	MAD001402320	B101	3861	A09	47.05	Off site	M079	46.82	F002 & F005	Yes	4				
201	IND000646943	B101	9999	A99	46.34	Off site	M082	46.34	F002 & F005	Yes	17	X			
202	LAD000757286	B101	2899	A75	56.00	Off site	M134	45.27	F002 & F005	Yes	4				
203	ILD000608471	B101	4953	A89	45.24	Off site	M085	45.24	F005	Yes	5				
204	MID083684290	B101	2869	A34	698.39	Off site	M074	45.10	F005		3				
205	IND000646943	B101	9999	A99	44.75	Off site	M082	44.75	F005	Yes	16	X			

206	RID058065707	B201	3081	A09	295.63	Off site	M081	44.46	F005	Yes	3				
207	IND000646943	B101	9999	A99	43.72	Off site	M082	43.72	F002 & F005	Yes	12				
208	ILD000608471	B201	4953	A89	42.40	Off site	M085	42.40	F002	Yes	5				
209	NJD002147023	B201	2833	A59	42.00	Off site	M089	42.00	F005		2				
210	PAD980550412	B101	2833	A09	41.70	Off site	M081	41.70	F002 & F005		5				
211	OKD079986568	B101	3861	A37	41.69	Off site	M082	41.69	F002 & F005	Yes	4				
212	CTD001840974	B101	3829	A49	162.19	Off site	M094	41.04	F002	Yes	3				
213	CTD000604488	B101	4953	A89	42.33	Off site	M077	40.03	F002 & F005	Yes	13	X			
214	ILD000608471	B201	4953	A89	40.00	Off site	M085	40.00	F005	Yes	5				
215	NYD000707901	B101	3674	A09	38.50	Off site	M085	38.50	F002 & F005	Yes	7				
216	KSD007246846	B101	5093	A51	42.89	Off site	M091	37.01	F005	Yes	13	X			
217	OHD000816629	B201	4953	A89		Off site	M099	36.20	F002 & F005	Yes	79	X			
218	TXD056542749	B101	4581	A19	22.14	On site	M071	34.86	F002 & F005	Yes	4				
219	TXD056542749	B101	4581	A29	22.14	On site	M071	34.86	F002 & F005	Yes	4				
220	CTD001449784	B101	3721	A63	37.50	Off site	M085	34.62	F002	Yes	2				
221	TXD052649027	B101	7389	A89	797.57	Off site	M089	33.04	F002		4				
222	IND000646943	B101	9999	A99	33.03	Off site	M092	33.03	F002 & F005	Yes	27	X			
223	NYD003930849	B101	2079	A04	32.03	On site	M136	32.03	F005	Yes	2				
224	MAR000007559	B101	3695	A29	196.18	On site	M135	30.57	F005		1				
225	MAD053452637	B201	4226	A89	241.74	Off site	M085	27.11	F002 & F005	Yes	63	X			
226	NYD980592497	B101	3861	A34	26.79	On site	M136	26.79	F002 & F005	Yes	4				
227	NYD002067932	B101	2672	A65	25.70	Off site	M099	25.70	F002 & F005	Yes	4				
228	OHD980681571	B201	7389	A37		Off site	M094	25.57	F002 & F005		4				
229	KSD007246846	B101	5093	A19	25.49	Off site	M089	25.49	F002		2	X			
230	VAD980831176	B101	3541	A69		On site	M082	23.96	F002	Yes	3				
231	IND000646943	B101	9999	A99	23.08	Off site	M082	23.08	F002 & F005	Yes	18				
232	ILD000608471	B101	4953	A89	22.41	Off site	M085	22.41	F005	Yes	5				
233	ILD000608471	B201	4953	A89	22.40	Off site	M085	22.40	F002	Yes	5				
234	ILD000608471	B201	4953	A89	22.00	Off site	M085	22.00	F002	Yes	5				
235	MID083684290	B101	2869	A34	698.39	Off site	M074	21.89	F005		3				
236	KSD980854285	B101	2869	A37	21.75	Off site	M082	21.75	F005		3				

237	IND000646943	B101	9999	A99	21.47	Off site	M082	21.47	F002 & F005	Yes	19	X			
238	MOD071987416	B101	4581	A01	253.74	Off site	M091	20.98	F002	Yes	4				
239	NYD980592497	B101	3861	A78	20.85	On site	M136	20.85	F002 & F005	Yes	14				
240	NJD002385730	B101	2869	A37	20.85	On site	M094	20.85	F005		2				
241	ILD000608471	B201	4953	A89	20.80	Off site	M085	20.80	F005	Yes	4				
242	ILD000608471	B201	4953	A89	20.80	Off site	M085	20.80	F002 & F005	Yes	5				
243	FL6170024412	B201	9711	A75	99.44	Off site	M134	20.51	F002 & F005		7				
244	MAR000007955	B101	2865	A31	571.38	Off site	M083	20.50	F002 & F005	Yes	5				
245	MAD000604447	B101	5093	A89	341.75	Off site	M078	20.41	F002 & F005	Yes	25	X			
246	ILD000608471	B201	4953	A89	20.40	Off site	M085	20.40	F005	Yes	5				
247	MAD019371079	B101	4953	A73	30.18	Off site	M099	20.22	F002	Yes	7				
248	ILD000608471	B201	4953	A89	32.02	Off site	M085	20.00	F005	Yes	3				
249	IND000646943	B101	9999	A99	19.99	Off site	M092	19.99	F005	Yes	4				
250	CTD980668198	B101	9711	A01	136.46	Off site	M092	19.89	F002	Yes	5				
251	ILD000608471	B201	4953	A89	19.20	Off site	M085	19.20	F005	Yes	5				
252	ILD000608471	B201	4953	A89	19.20	Off site	M085	19.20	F002 & F005		5				
253	VAR000004978	B201	3679	A99	19.14	Off site	M082	19.14	F002		3				
254	ILD000608471	B201	4953	A89	18.80	Off site	M085	18.80	F005	Yes	4				
255	ILD000608471	B201	4953	A89	18.80	Off site	M085	18.80	F002 & F005	Yes	5				
256	OKD987083946	B101	3721	A01	18.77	Off site	M134	18.77	F002		1				
257	CA7170090016	B101	9711	A19	18.71	On site	M135	18.71	F002	Yes	3	X			
258	TXD056542749	B101	4581	A76	11.07	On site	M071	17.43	F002	Yes	4				
259	IND000646943	B101	9999	A99	17.20	Off site	M092	17.20	F002 & F005	Yes	18	X			
260	DED053304770	B101	2821	A04	17.14	On site	M135	17.14	F005	Yes	3				
261	FLD980729610	B201	4953	A99	933.15	Off site	M081	17.09	F002 & F005	Yes	38	X			
262	NJD006980924	B101	8731	A69	16.97	On site	M082	16.97	F002		1				
263	UTD001705029	B101	3764	A63		On site	M135	16.53	F002		2				
264	IND000646943	B101	9999	A99	15.80	Off site	M092	15.80	F005	Yes	3				
265	PAD004498432	B101	2869	A37	15.64	Off site	M081	15.64	F002 & F005	Yes	5				
266	IND085616837	B101	2869	A73	214.46	Off site	M085	14.87	F002		1				
267	ILD000608471	B201	4953	A89	14.80	Off site	M085	14.80	F002	Yes	5				

268	GAR000012336	B101	2231	A69	14.80	Off site	M082	14.80	F002 & F005		3				
269	NCD986177061	B201	8734	A94	23.81	Off site	M085	14.43	F002	Yes	4				
270	IND000646943	B101	9999	A99	14.29	Off site	M082	14.29	F005	Yes	7	X			
271	IND000646943	B101	9999	A99	14.11	Off site	M082	14.11	F002 & F005	Yes	10				
272	ILD000608471	B201	4953	A89	13.60	Off site	M085	13.60	F005	Yes	5				
273	TXD052649027	B101	7389	A89	797.57	Off site	M091	13.37	F002		4				
274	IND000646943	B101	9999	A99	13.29	Off site	M082	13.29	F005	Yes	11				
275	IND000646943	B101	9999	A99	12.96	Off site	M082	12.96	F002 & F005	Yes	16	X			
276	TXD052649027	B101	7389	A89	797.57	Off site	M079	12.61	F002		4				
277	IND000646943	B101	9999	A99	12.19	Off site	M082	12.19	F002 & F005	Yes	18	X			
278	CAD982437089	B101	3728	A21	12.09	Off site	M071	12.09	F005	Yes	4				
279	CTD000845198	B101	4911	A51	11.90	Off site	M092	11.90	F002 & F005		3				
280	NYD980592497	B101	3861	A35	11.71	On site	M136	11.71	F005		4				
281	NYD000809350	B101	3411	A65	11.10	Off site	M083	11.10	F005		2				
282	LAD000757286	B101	2899	A75	56.00	On site	M136	10.73	F002 & F005	Yes	4				
283	NJD002385730	B101	2869	A94	10.43	On site	M094	10.43	F002	Yes	2				
284	TXD062128004	B101	5161	A04	10.33	Off site	M134	10.33	F002		1				
285	OHD000816629	B201	4953	A89		Off site	M099	10.25	F005	Yes	71	X			
286	NYD980592497	B101	3861	A31	10.01	On site	M136	10.01	F002		1				
287	TND982109142	B101	4953		9.22	On site	M134	9.22	F002		5				
288	CTD000604488	B201	4953	A89	12.04	Off site	M085	9.06	F002 & F005	Yes	14	X			
289	CTD000844332	B101	3724	A63	9.02	Off site	M094	9.02	F002		1				
290	TXD077603371	B101	0	A49	8,006.53	Off site	M121	8.51	F005	Yes	4				
291	CTD001139617	B101	2891	A69	10.32	Off site	M099	8.04	F002	Yes	3				
292	NYD002211324	B101	3579	A09	8.02	Off site	M085	7.82	F002 & F005	Yes	6				
293	CAD000627273	B101	3728	A09	7.76	Off site	M084	7.76	F002	Yes	5				
294	FLD980729610	B201	4953	A99	933.15	Off site	M081	7.72	F002 & F005	Yes	38	X			
295	NYD980592497	B101	3861	A09	7.61	On site	M136	7.61	F005		1				
296	PAD001887579	B101	3353	A29	6.99	Off site	M085	6.74	F005	Yes	3				
297	CAD049904766	B101	3577	A65	7.81	Off site	M099	6.66	F002		1				
298	NYD980592497	B101	3861	A37	6.31	On site	M136	6.31	F005		3				

299	KSD007246846	B101	5093	A51	42.89	Off site	M091	5.88	F005	Yes	13	X			
300	NYD980592497	B101	3861	A09	5.66	On site	M136	5.66	F005	Yes	3				
301	MED985467935	B101	8734	A94	5.65	Off site	M099	5.65	F005	Yes	6	X			
302	NYD002211324	B101	3579	A53	11.18	Off site	M085	5.25	F002 & F005		5	X			
303	MSD054179403	B201	2911	A94	5.20	On site	M081	5.20	F005		5				
304	NYD000098558	B101	7216	A61	5.14	Off site	M089	5.14	F002	Yes	2				
305	PAD067098822	B101	4953	A89	143.75	Off site	M078	5.05	F002 & F005	Yes	15				
306	WID068318146	B101	3089	A21	4.80	Off site	M085	4.80	F002		1				
307	UTD001705029	B101	3764	A63		On site	M135	4.73	F002		2				
308	OHD066060609	B101	7389	A73	4.64	Off site	M094	4.64	F002 & F005	Yes	20	X			
309	ILD000608471	B201	4953	A89	4.40	Off site	M085	4.40	F005		3	X			
310	IND000646943	B101	9999	A99	4.26	Off site	M092	4.26	F002 & F005	Yes	21	X			
311	NYD980592497	B101	3861	A19	6.19	On site	M136	4.24	F002 & F005	Yes	149	X	X	X	X
312	OHD052324290	B101	3679	A64	4.16	Off site	M134	4.16	F005		2				
313	OHD980681571	B101	7389	A19		Off site	M094	4.15	F005		3				
314	OHD066060609	B101	7389	A73	4.11	Off site	M094	4.11	F002 & F005	Yes	20	X			
315	MID000820381	B101	2834	A36	17.54	On site	M134	3.82	F002 & F005		3				
316	NYD003930849	B101	2079	A94	3.36	On site	M136	3.36	F005	Yes	3				
317	NYD980592497	B101	3861	A04	3.21	On site	M136	3.21	F005		3				
318	ILD000608471	B201	4953	A89	3.00	Off site	M085	3.00	F002		2				
319	ILD000608471	B201	4953	A89	2.88	Off site	M085	2.88	F002 & F005	Yes	5				
320	NYD080480734	B101	3571	A09		Off site	M089	2.86	F005	Yes	3				
321	ILD000608471	B201	4953	A89	2.76	Off site	M085	2.76	F005	Yes	3				
322	IND000646943	B101	9999	A99	2.65	Off site	M082	2.65	F002 & F005	Yes	22	X			
323	CT5000001107	B101	9511	A94	3.88	Off site	M077	2.52	F002	Yes	2				
324	FLD981474802	B201	4953	A99	71.49	Off site	M081	2.40	F002 & F005	Yes	14	X			
325	CTD001139617	B101	2891	A69	10.32	Off site	M099	2.28	F002	Yes	3				
326	NYD980592497	B101	3861	A04	2.09	On site	M136	2.09	F005		3				
327	OHD005046677	B101	3724	A94	1.96	Off site	M099	1.96	F005		2				
328	NY0000926436	B101	2835	A04	1.88	On site	M136	1.88	F005	Yes	4				
329	ORD099149445	B101		A01	1.88	Off site	M082	1.88	F002 & F005		4				

330	OHD980681571	B101	7389	A94		Off site	M082	1.83	F005		4				
331	FLD981474802	B101	4953	A99	38.12	Off site	M099	1.73	F002 & F005	Yes	25	X			
332	OHD980681571	B101	7389	A21		Off site	M094	1.60	F005	Yes	4				
333	OHD980681571	B201	7389	A19		Off site	M094	1.60	F002	Yes	2				
334	ILD000608471	B201	4953	A89	1.54	Off site	M085	1.54	F005	Yes	2				
335	NYD002211324	B101	3579	A59	2.83	Off site	M085	1.53	F005		2				
336	NYD980592497	B201	3861	A49	1.31	On site	M136	1.31	F005		5				
337	NYD980592497	B101	3861	A49	1.29	On site	M136	1.29	F002 & F005		2				
338	OHD980681571	B201	7389	A89		Off site	M082	1.19	F005		4				
339	CT5000001107	B101	9511	A94	3.88	Off site	M077	1.15	F002	Yes	2				
340	ILD000608471	B201	4953	A89	1.10	Off site	M085	1.10	F005		4				
341	MD6150004095	B201	8099	A71	1.27	On site	M135	1.05	F002	Yes	6				
342	NYD980592497	B101	3861	A60	0.92	On site	M136	0.92	F002 & F005		2				
343	WAD988478723	B101		A99	0.92	Off site	M121	0.92	F002		2				
344	NHD500015441	B201	3499	A21	0.90	Off site	M075	0.90	F005		3				
345	MD6150004095	B201	8099	A71	1.04	On site	M135	0.88	F002	Yes	8	X			
346	OHD980681571	B101	7389	A38		Off site	M094	0.88	F002		2				
347	TXD050858182	B101	3679	A69	0.34	Off site	M085	0.83	F002	Yes	4				
348	NYD053719894	B101	3724	A93	0.83	Off site	M074	0.83	F002	Yes	2				
349	ILD005158274	B101	3585	A61	4.18	Off site	M099	0.77	F002	Yes	2				
350	NYD980592497	B101	3861	A31	0.68	On site	M136	0.68	F002 & F005		3				
351	NYD980592497	B101	3861	A94	0.66	On site	M136	0.66	F002 & F005		3				
352	ILD000608471	B201	4953	A89	0.66	Off site	M085	0.66	F002		3				
353	NYD080480734	B101	3571	A69		Off site	M089	0.60	F002		2				
354	OHD980681571	B201	7389	A69		Off site	M094	0.50	F002	Yes	2				
355	NYD002211324	B101	3579	A09	8.02	Off site	M078	0.49	F002 & F005	Yes	6				
356	WAD009249863	B101		A19	0.94	Off site	M082	0.48	F005		2				
357	CTD001186212	B101	3675	A09	0.46	Off site	M085	0.46	F002	Yes	2				
358	ALD000622464	B201	4953	A89	8.79	Off site	M079	0.46	F002 & F005	Yes	40	X	X		
359	OHD980681571	B201	7389	A31		Off site	M094	0.45	F005		1				
360	ILD000608471	B201	4953	A89	0.44	Off site	M085	0.44	F005	Yes	2				

361	NYD980592497	B101	3861	A31	0.42	On site	M136	0.42	F005		2					
362	AKD009252230	B101	2611	A53	0.41	Off site	M082	0.41	F002 & F005		3					
363	ORD009227398	B201		A06	0.31	Off site	M082	0.31	F002	Yes	4					
364	GAD980845077	B101	5169	A57	0.30	Off site	M099	0.30	F002 & F005		4					
365	PAD003038056	B201	3861	A09	1.15	Off site	M091	0.30	F005		3					
366	NYD980592497	B101	3861	A69	0.29	On site	M136	0.29	F002 & F005		13	X				
367	CTD001149277	B101	3724	A63	0.23	Off site	M094	0.23	F002		1					
368	GAD981224991	B101	5999	A69	0.23	Off site	M075	0.23	F002	Yes	3					
369	PAD987271848	B201	2812	A94	39.74	Off site	M094	0.23	F002 & F005		4					
370	ILD000608471	B201	4953	A89	0.22	Off site	M085	0.22	F005	Yes	5	X				
371	CT5000001107	B101	9511	A94	3.88	Off site	M077	0.21	F002	Yes	2					
372	TXD050858182	B101	3679	A69	0.34	Off site	M077	0.20	F002	Yes	4					
373	MID980683775	B101	2522	A19	0.85	Off site	M091	0.20	F005	Yes	10	X				
374	WA0000189431	B201		A58	0.19	Off site	M082	0.19	F005		3					
375	NYD002211324	B101	3579	A53	0.18	Off site	M085	0.18	F002 & F005		4					
376	NYD980592497	B101	3861	A99	0.17	On site	M136	0.17	F005		1					
377	CTD001169010	B101	2899	A37	12.48	Off site	M077	0.10	F002	Yes	3					
378	NYD980592497	B201	3861	A35	0.10	On site	M136	0.10	F005		3					
379	NYD980592497	B201	3861	A29	0.08	On site	M136	0.08	F005		3					
380	NYD980592497	B101	3861	A34	0.06	On site	M136	0.06	F005		1					
381	ILD000608471	B201	4953	A89	0.04	Off site	M085	0.04	F005	Yes	3					
382	NYD980592497	B101	3861	A99	0.02	On site	M136	0.02	F005	Yes	5					
383	NYD980592497	B201	3861	A49	0.01	On site	M136	0.01	F005		2					
Data Summary:		Column totals =							51,496,157		5,316,286		192,509	16,828	2,064	4
Count of wastestreams =									383	207		58 (15.1%)	3 (0.8%)	2 (0.5%)	1 (0.3%)	
Count of managing facilities =									175	175		25	2	2	1	

**Summary of Facilities and Wastestreams**  
**Potentially Eligible for the Proposed Expansion of the RCRA “Headworks Exemption”**  
**to Apply to Four Additional Spent Solvent Chemicals**  
**(Data source: USEPA Office of Solid Waste, 1997 Biennial Reporting System (BRS)**  
**for RCRA hazardous waste generation and management)**

Spent Solvent Chemical	Aqueous* F002 & F005 Spent Solvent Management			
	Count of F002 & F005 aqueous spent solvent waste streams managed in wastewater treatment systems**		Count of F002 & F005 aqueous spent solvent managing facilities (LQGs)	Annual quantity of F002 & F005 aqueous spent solvent wastes managed
Benzene	58	15.1%	25	192,509
2-Ethoxyethanol	1	0.3%	1	4
1,1,2-Trichloroethane	3	0.8%	2	16,828
2-Nitropropane	2	0.5%	2	1
Non-duplicative subtotal (4 solvents) =	59	15.4%	27	209,342
Unconfirmed chemical type of F002 or F005 spent solvent managed	324	84.6%	148	51.287 million
Total all LQG aqueous F002 & F005 spent solvents managed in wastewater treatment systems =	383	100%	175	51.496 million

**Explanatory Notes:**

- (a) Facility count and annual quantity of four chemical-specific spent solvent wastestreams potentially eligible for revised headworks exemption does not reflect whether each facility and wastestream will meet a minimum break-even microeconomic tradeoff benefit in the form of waste management annual cost savings, after netting-out annual “direct monitoring” or “mass balance” reporting costs.
- (b) \* Aqueous defined according to USEPA Office of Solid Waste “Biennial Reporting System” (BRS) hazardous waste physical form codes:  
B101 = aqueous waste with low solvents  
B102 = concentrated solvent-water solution
- (c) \*\* Wastewater treatment systems defined according to the following BRS database hazardous waste management system type codes:  
M071 to M099 = aqueous inorganic and/or aqueous organic waste treatment systems  
M121 to M123 = other aqueous/liquid treatment systems (neutralization, evaporation, settling/clarification)  
M133 to M136 = other aqueous waste treatment or disposal (i.e. surface impoundment, deepwell underground injection, direct discharge to sewer/POTW, direct discharge to surface water under NPDES).

**Aqueous F002 & F005 Spent Solvent Hazardous Waste Quantities**  
**As Basis For Estimating Potential Cost Savings for Revising the “Headworks Exemption”**  
**to Include F005 Benzene & F005 2-Ethoxyethanol**

(source: 1997 BRS – see prior list of facilities data table in this report for BRS database query criteria)

WW flow days/year (EPA-821-R-98-016, Dec.1998, p.1-2) = 260		Tons per truck trip >		20	Gallons WW to generate 1.0 ton WW sludge = 2,931						
Waste stream item	EPA_ID	Alternative Equivalent Metrics for Annual Waste Quantity					Count of offsite shipments per year (full tanker truckload equivalents)	RCRA BRS Waste Management System Code	Waste treatment location	Waste Treatment Method (RCRA BRS Description)	Imputed WW treatment sludge quantity** (tons/year)
		1997 aqueous spent solvent managed (tons/year)	Gallon equivalent (assuming average 8.34 lbs/gallon)	Million gallons per day (mgd) equivalent	Gallons per minute (gpm) equivalent	Count of 55-gallon drum equivalents					
1	TND003376928	42,712,496	10,242,804,736	39.395	27,358	186,232,813		M081	On site	Biological treatment	3,495,072
2	PAD003043353	2,485,320	596,000,000	2.292	1,592	10,836,364		M136	On site	Direct discharge to surface water under NPDES	0
3	NYD003930849	717,097	171,965,707	0.661	459	3,126,649		M136	On site	Direct discharge to surface water under NPDES	0
4	NYR000030726	583,820	140,004,760	0.538	374	2,545,541		M082	On site	Carbon adsorption	47,773
5	NYD059385120	557,330	133,652,278	0.514	357	2,430,041		M136	On site	Direct discharge to surface water under NPDES	0
6	NYD002211324	498,170	119,465,228	0.459	319	2,172,095		M136	On site	Direct discharge to surface water under NPDES	0
7	IND000806935	443,616	106,382,617	0.409	284	1,934,229		M135	On site	Direct discharge to sewer/POTW	0
8	MAD001402320	371,026	88,975,007	0.342	238	1,617,727		M135	On site	Direct discharge to sewer/POTW	0
9	ALD079109013	343,704	82,423,058	0.317	220	1,498,601		M083	On site	Air/steam stripping	28,125
10	GAD039046800	303,995	72,900,480	0.280	195	1,325,463		M135	On site	Direct discharge to sewer/POTW	0
11	PAD043882323	208,333	49,960,000	0.192	133	908,364		M135	On site	Direct discharge to sewer/POTW	0
12	CAD093365435	207,042	49,650,288	0.191	133	902,733		M083	On site	Air/steam stripping	16,942
13	LA4800014587	206,023	49,405,988	0.190	132	898,291		M136	On site	Direct discharge to surface water under NPDES	0
14	CA1800090010	154,953	37,158,963	0.143	99	675,618		M083	On site	Air/steam stripping	12,679

15	IND006050967	150,182	36,014,805	0.139	96	654,815		M136	On site	Direct discharge to surface water under NPDES	0
16	MAD058060476	129,000	30,935,252	0.119	83	562,459		M135	On site	Direct discharge to sewer/POTW	0
17	IND006050967	124,053	29,748,921	0.114	79	540,889		M136	On site	Direct discharge to surface water under NPDES	0
18	NYD980592497	105,064	25,195,234	0.097	67	458,095		M136	On site	Direct discharge to surface water under NPDES	0
19	ORD009023466	101,312	24,295,420	0.093	65	441,735		M136	On site	Direct discharge to surface water under NPDES	0
20	NYD980592497	93,607	22,447,816	0.086	60	408,142		M136	On site	Direct discharge to surface water under NPDES	0
21	CAD093365435	88,291	21,173,020	0.081	57	384,964		M085	On site	Other aqueous organic treatment	7,225
22	NCD003217437	75,063	18,000,612	0.069	48	327,284		M135	On site	Direct discharge to sewer/POTW	0
23	MAD001923408	74,854	17,950,610	0.069	48	326,375		M134	On site	Deepwell injection	0
24	NYD002220804	65,291	15,657,260	0.060	42	284,677		M121	On site	Neutralization only	5,343
25	NYD003930849	55,311	13,263,988	0.051	35	241,163		M136	On site	Direct discharge to surface water under NPDES	0
26	NCD051330280	51,782	12,417,786	0.048	33	225,778		M135	On site	Direct discharge to sewer/POTW	0
27	MAD000846493	47,726	11,445,203	0.044	31	208,095		M083	On site	Air/steam stripping	3,905
28	MAD001033190	45,377	10,881,665	0.042	29	197,848		M135	On site	Direct discharge to sewer/POTW	0
29	OKD079986568	37,654	9,029,707	0.035	24	164,176		M135	On site	Direct discharge to sewer/POTW	0
30	COD076470525	31,097	7,457,325	0.029	20	135,588		M085	On site	Other aqueous organic treatment	2,545
31	MAD062163191	29,372	7,043,745	0.027	19	128,068		M135	On site	Direct discharge to sewer/POTW	0
32	NYD002211324	28,298	6,786,091	0.026	18	123,383		M135	On site	Direct discharge to sewer/POTW	0
33	NYD084006741	27,443	6,581,010	0.025	18	119,655		M082	On site	Carbon adsorption	2,246
34	NYD980592497	23,803	5,708,128	0.022	15	103,784		M136	On site	Direct discharge to surface water under NPDES	0
35	NJD002385730	23,656	5,673,000	0.022	15	103,145		M094	On site	Other aqueous	1,936

										organic/inorganic treatment	
36	NYD980592497	22,031	5,283,132	0.020	14.1	96,057		M136	On site	Direct discharge to surface water under NPDES	0
37	VAD023741705	19,650	4,712,230	0.018	12.6	85,677		M083	On site	Air/steam stripping	1,608
38	NYD980592497	16,824	4,034,456	0.016	10.8	73,354		M136	On site	Direct discharge to surface water under NPDES	0
39	NYD980592497	15,494	3,715,630	0.014	9.9	67,557		M136	On site	Direct discharge to surface water under NPDES	0
40	KSD007482011	15,072	3,614,443	0.014	9.7	65,717		M135	On site	Direct discharge to sewer/POTW	0
41	MND000819268	15,007	3,598,717	0.014	9.6	65,431		M083	On site	Air/steam stripping	1,228
42	PAD041399403	14,554	3,490,119	0.013	9.3	63,457		M135	On site	Direct discharge to sewer/POTW	0
43	FL6170024412	7,503	1,799,221	0.007	4.8	32,713		M135	On site	Direct discharge to sewer/POTW	0
44	ALD003297116	6,839	1,639,938	0.006	4.4	29,817		M081	On site	Biological treatment	560
45	NYD986954147	6,713	1,609,843	0.006	4.3	29,270		M136	On site	Direct discharge to surface water under NPDES	0
46	NYD980592497	6,365	1,526,459	0.006	4.1	27,754		M136	On site	Direct discharge to surface water under NPDES	0
47	FLD046771952	5,930	1,422,074	0.005	3.8	25,856		M135	On site	Direct discharge to sewer/POTW	0
48	OKD000632737	5,801	1,391,029	0.005	3.7	25,291		M135	On site	Direct discharge to sewer/POTW	0
49	NYD041292509	5,472	1,312,230	0.005	3.5	23,859		M135	On site	Direct discharge to sewer/POTW	0
50	VAD988170445	5,375	1,288,915	0.005	3.4	23,435		M081	On site	Biological treatment	440
51	NYD002100352	4,966	1,190,857	0.005	3.2	21,652		M083	On site	Air/steam stripping	406
52	NYD059385120	4,863	1,166,120	0.004	3.1	21,202		M135	On site	Direct discharge to sewer/POTW	0
53	NYD980592497	4,497	1,078,492	0.004	2.9	19,609		M136	On site	Direct discharge to surface water under NPDES	0
54	NYD980592497	4,494	1,077,626	0.004	2.9	19,593		M136	On site	Direct discharge to surface water under NPDES	0
55	NYD980592497	4,492	1,077,125	0.004	2.9	19,584		M136	On site	Direct discharge to surface water under NPDES	0
56	WAR000008979	4,313	1,034,200	0.004	2.8	18,804		M074	On site	Chemical precipitation	353

57	NYD980592497	3,671	880,246	0.003	2.4	16,004		M136	On site	Direct discharge to surface water under NPDES	0
58	NYD980592497	3,435	823,651	0.003	2.2	14,975		M136	On site	Direct discharge to surface water under NPDES	0
59	NYD980592497	3,404	816,245	0.003	2.2	14,841		M136	On site	Direct discharge to surface water under NPDES	0
60	COD007068646	3,381	810,768	0.003	2.2	14,741		M136	On site	Direct discharge to surface water under NPDES	0
61	TXD981512122	3,176	761,559	0.003	2.0	13,847		M081	On site	Biological treatment	260
62	UTD009081357	3,048	730,977	0.003	2.0	13,290		M135	On site	Direct discharge to sewer/POTW	0
63	COD980952097	2,998	719,028	0.003	1.9	13,073		M083	On site	Air/steam stripping	245
64	FL6170024412	2,850	683,417	0.003	1.8	12,426		M135	On site	Direct discharge to sewer/POTW	0
65	CAD000030494	2,848	683,063	0.003	1.8	12,419		M092	On site	Chemical precipitation in combination with carbon adsorption	233
66	CA1800090010	2,810	673,823	0.003	1.8	12,251		M085	On site	Other aqueous organic treatment	230
67	TXD077603371	2,801	671,652	0.003	1.8	12,212	140.0	M134	Off site	Deepwell injection	0
68	NYD980592497	2,671	640,483	0.002	1.7	11,645		M136	On site	Direct discharge to surface water under NPDES	0
69	NYD000824482	2,096	502,577	0.0019	1.34	9,138		M135	On site	Direct discharge to sewer/POTW	0
70	NED981723513	2,060	494,003	0.0019	1.32	8,982	103.0	M079	Off site	Other aqueous treatment	169
71	FLD004073177	1,969	472,116	0.0018	1.26	8,584		M135	On site	Direct discharge to sewer/POTW	0
72	GAD061022216	1,892	453,635	0.0017	1.21	8,248		M074	On site	Chemical precipitation	155
73	OHD093945293	1,699	407,525	0.0016	1.09	7,410	85.0	M134	Off site	Deepwell injection	0
74	NYD980592497	1,674	401,340	0.0015	1.07	7,297		M136	On site	Direct discharge to surface water under NPDES	0
75	WA7890008967	1,650	395,789	0.0015	1.06	7,196		M122	On site	Evaporation only	135
76	NYD980592497	1,591	381,650	0.0015	1.02	6,939		M136	On site	Direct discharge to surface water under NPDES	0
77	CA7170090016	1,576	377,919	0.0015	1.01	6,871		M135	On site	Direct discharge to sewer/POTW	0
78	NYD980592497	1,539	369,000	0.0014	0.99	6,709		M136	On site	Direct discharge to surface	0

										water under NPDES	
79	UTD001705029	1,522	365,062	0.0014	0.98	6,637		M135	On site	Direct discharge to sewer/POTW	0
80	NJD002385730	1,501	360,000	0.0014	0.96	6,545		M094	On site	Other aqueous organic/inorganic treatment	123
81	NYD980592497	1,419	340,339	0.0013	0.91	6,188		M136	On site	Direct discharge to surface water under NPDES	0
82	TXD077603371	1,293	310,187	0.0012	0.83	5,640	64.7	M094	Off site	Other aqueous organic/inorganic treatment	106
83	NYD003930849	1,266	303,630	0.0012	0.81	5,521		M136	On site	Direct discharge to surface water under NPDES	0
84	LAD985218742	1,251	300,040	0.0012	0.80	5,455		M135	On site	Direct discharge to sewer/POTW	0
85	MID000820381	1,202	288,246	0.0011	0.77	5,241		M135	On site	Direct discharge to sewer/POTW	0
86	NYD980592497	1,084	259,841	0.0010	0.69	4,724		M136	On site	Direct discharge to surface water under NPDES	0
87	COD000694869	1,001	239,961	0.0009	0.64	4,363	50.0	M091	Off site	Chemical precipitation in combination with biological treatment	82
88	OKD000758599	913	218,959	0.0008	0.58	3,981		M083	On site	Air/steam stripping	75
89	WID000808824	878	210,505	0.0008	0.56	3,827	43.9	M094	Off site	Other aqueous organic/inorganic treatment	72
90	WID990829475	878	210,476	0.0008	0.56	3,827	43.9	M091	Off site	Chemical precipitation in combination with biological treatment	72
91	NYD980592497	848	203,300	0.0008	0.54	3,696		M136	On site	Direct discharge to surface water under NPDES	0
92	CAD000030494	804	192,822	0.0007	0.52	3,506		M122	On site	Evaporation only	66
93	WID000808824	746	178,849	0.0007	0.48	3,252	37.3	M094	Off site	Other aqueous organic/inorganic treatment	61
94	GAD003324985	727	174,259	0.0007	0.47	3,168		M136	On site	Direct discharge to surface water under NPDES	0
95	NYD981561962	705	169,137	0.0007	0.45	3,075	35.3	M085	Off site	Other aqueous organic treatment	58
96	TXD052649027	670	160,614	0.0006	0.43	2,920	33.5	M134	Off site	Deepwell injection	0
97	PAD030069140	616	147,602	0.0006	0.39	2,684	30.8	M085	Off site	Other aqueous organic treatment	50

98	OHD001926740	590	141,471	0.0005	0.38	2,572	29.5	M094	Off site	Other aqueous organic/inorganic treatment	48
99	KYD053348108	580	139,141	0.0005	0.37	2,530		M082	On site	Carbon adsorption	47
100	CAD008302903	563	134,926	0.0005	0.36	2,453	28.1	M079	Off site	Other aqueous treatment	46
101	FL6170024412	552	132,271	0.0005	0.35	2,405		M135	On site	Direct discharge to sewer/POTW	0
102	NJD056356066	550	131,792	0.0005	0.35	2,396	27.5	M082	Off site	Carbon adsorption	45
103	OHD980681571	528	126,501	0.0005	0.34	2,300	26.4	M094	Off site	Other aqueous organic/inorganic treatment	43
104	TXD981898760	499	119,664	0.0005	0.32	2,176	25.0	M083	Off site	Air/steam stripping	41
105	NYD980592497	495	118,800	0.0005	0.32	2,160		M136	On site	Direct discharge to surface water under NPDES	0
106	IND000646943	495	118,710	0.0005	0.32	2,158	24.8	M082	Off site	Carbon adsorption	41
107	AZD009015389	487	116,903	0.0004	0.31	2,126	24.4	M081	Off site	Biological treatment	40
108	WVD988776852	476	114,189	0.0004	0.30	2,076	23.8	M134	Off site	Deepwell injection	0
109	NYD980592497	473	113,491	0.0004	0.30	2,063		M136	On site	Direct discharge to surface water under NPDES	0
110	UTD001705029	462	110,809	0.0004	0.30	2,015		M135	On site	Direct discharge to sewer/POTW	0
111	NYD003930849	455	109,135	0.0004	0.29	1,984		M136	On site	Direct discharge to surface water under NPDES	0
112	NYD980592497	425	102,000	0.0004	0.27	1,855		M136	On site	Direct discharge to surface water under NPDES	0
113	GAD003324985	422	101,285	0.0004	0.27	1,842		M136	On site	Direct discharge to surface water under NPDES	0
114	AZD009015389	421	100,863	0.0004	0.27	1,834	21.0	M134	Off site	Deepwell injection	0
115	UTD001705029	362	86,882	0.0003	0.23	1,580	18.1	M134	Off site	Deepwell injection	0
116	GAD033582461	362	86,867	0.0003	0.23	1,579		M094	On site	Other aqueous organic/inorganic treatment	30
117	WAR000008979	358	85,800	0.0003	0.23	1,560		M074	On site	Chemical precipitation	29
118	PAD030069140	353	84,628	0.0003	0.23	1,539	17.6	M085	Off site	Other aqueous organic treatment	29
119	FL6170024412	348	83,539	0.0003	0.22	1,519		M135	On site	Direct discharge to sewer/POTW	0
120	ILD980613913	347	83,280	0.0003	0.22	1,514	17.4	M134	Off site	Deepwell injection	0
121	OHD066060609	341	81,753	0.0003	0.22	1,486	17.0	M094	Off site	Other aqueous	28

										organic/inorganic treatment	
122	ILD005083316	334	80,202	0.0003	0.21	1,458	16.7	M094	Off site	Other aqueous organic/inorganic treatment	27
123	OHD980681571	332	79,601	0.0003	0.21	1,447	16.6	M094	Off site	Other aqueous organic/inorganic treatment	27
124	PRD090036021	295	70,719	0.0003	0.19	1,286		M135	On site	Direct discharge to sewer/POTW	0
125	WID990829475	288	69,000	0.0003	0.18	1,255	14.4	M091	Off site	Chemical precipitation in combination with biological treatment	24
126	CTD064828726	284	68,112	0.0003	0.18	1,238		M135	On site	Direct discharge to sewer/POTW	0
127	OHD004182408	278	66,759	0.0003	0.18	1,214	13.9	M094	Off site	Other aqueous organic/inorganic treatment	23
128	OKD981909849	276	66,170	0.0003	0.18	1,203	13.8	M134	Off site	Deepwell injection	0
129	MAD000844597	275	66,022	0.0003	0.18	1,200	13.8	M081	Off site	Biological treatment	23
130	WID990829475	260	62,352	0.0002	0.17	1,134	13.0	M091	Off site	Chemical precipitation in combination with biological treatment	21
131	MAR000007955	259	62,126	0.0002	0.17	1,130	13.0	M083	Off site	Air/steam stripping	21
132	MAD980912323	256	61,318	0.0002	0.16	1,115	12.8	M091	Off site	Chemical precipitation in combination with biological treatment	21
133	RID058065707	251	60,234	0.0002	0.16	1,095	12.6	M081	Off site	Biological treatment	21
134	OKD089761290	251	60,190	0.0002	0.16	1,094	12.5	M134	Off site	Deepwell injection	0
135	NYD980592497	248	59,354	0.0002	0.16	1,079		M136	On site	Direct discharge to surface water under NPDES	0
136	IND000646943	242	58,127	0.0002	0.16	1,057	12.1	M092	Off site	Chemical precipitation in combination with carbon adsorption	20
137	NYD002081396	239	57,290	0.0002	0.15	1,042		M083	On site	Air/steam stripping	20
138	MND985694736	237	56,836	0.0002	0.15	1,033		M121	On site	Neutralization only	19
139	WAR000008979	223	53,500	0.0002	0.14	973		M072	On site	Chemical precipitation	18
140	MAD980912323	219	52,613	0.0002	0.14	957	11.0	M091	Off site	Chemical precipitation in combination with biological treatment	18
141	IND085616837	200	47,862	0.00018	0.13	870	10.0	M085	Off site	Other aqueous organic	16

										treatment	
142	ILD980613913	190	45,516	0.00018	0.12	828	9.5	M099	Off site	Other aqueous organic/inorganic treatment	15.5
143	CTD001449784	186	44,582	0.00017	0.12	811	9.3	M085	Off site	Other aqueous organic treatment	15.2
144	MAD001402320	186	44,541	0.00017	0.12	810	9.3	M085	Off site	Other aqueous organic treatment	15.2
145	PAD980551964	183	43,907	0.00017	0.12	798	9.2	M081	Off site	Biological treatment	15.0
146	OHD004172565	183	43,813	0.00017	0.12	797	9.1	M094	Off site	Other aqueous organic/inorganic treatment	14.9
147	NYD980592497	182	43,700	0.00017	0.12	795		M136	On site	Direct discharge to surface water under NPDES	0.0
148	NYD980592497	181	43,300	0.00017	0.12	787		M136	On site	Direct discharge to surface water under NPDES	0.0
149	FL6170024412	178	42,703	0.00016	0.11	776	8.9	M134	Off site	Deepwell injection	0.0
150	NYD980592497	170	40,700	0.00016	0.11	740		M136	On site	Direct discharge to surface water under NPDES	0.0
151	PAD067362327	161	38,552	0.00015	0.10	701	8.0	M094	Off site	Other aqueous organic/inorganic treatment	13.2
152	MAD000844597	151	36,174	0.00014	0.10	658	7.5	M081	Off site	Biological treatment	12.3
153	IND000646943	142	33,967	0.00013	0.09	618	7.1	M082	Off site	Carbon adsorption	11.6
154	NYD980592497	141	33,837	0.00013	0.09	615		M136	On site	Direct discharge to surface water under NPDES	0.0
155	NYD980592497	135	32,407	0.00012	0.09	589		M136	On site	Direct discharge to surface water under NPDES	0.0
156	NYD980592497	133	31,777	0.00012	0.08	578		M136	On site	Direct discharge to surface water under NPDES	0.00
157	CTD001840974	121	29,052	0.00011	0.08	528	6.1	M094	Off site	Other aqueous organic/inorganic treatment	9.91
158	IND000646943	118	28,246	0.00011	0.08	514	5.9	M082	Off site	Carbon adsorption	9.64
159	ILD980613913	116	27,937	0.00011	0.07	508	5.8	M134	Off site	Deepwell injection	0.00
160	PAD067098822	116	27,935	0.00011	0.07	508	5.8	M092	Off site	Chemical precipitation in combination with carbon adsorption	9.53
161	IND000646943	116	27,783	0.00011	0.07	505	5.8	M082	Off site	Carbon adsorption	9.48
162	MAD000604447	116	27,725	0.00011	0.07	504	5.8	M094	Off site	Other aqueous organic/inorganic treatment	9.46

163	TXD077603371	115	27,460	0.00011	0.073	499	5.7	M134	Off site	Deepwell injection	0.00
164	NYD980592497	110	26,489	0.00010	0.071	482		M136	On site	Direct discharge to surface water under NPDES	0.00
165	KYD000770313	109	26,070	0.00010	0.070	474	5.4	M081	Off site	Biological treatment	8.90
166	NCD980842132	106	25,493	0.00010	0.068	464	5.3	M085	Off site	Other aqueous organic treatment	8.70
167	NYD980592497	105	25,274	0.00010	0.068	460		M136	On site	Direct discharge to surface water under NPDES	0.00
168	NYD980592497	103	24,706	0.00010	0.066	449		M136	On site	Direct discharge to surface water under NPDES	0.00
169	COD160887741	100	24,040	0.00009	0.064	437		M135	On site	Direct discharge to sewer/POTW	0.00
170	IND000646943	100	24,037	0.00009	0.064	437	5.0	M082	Off site	Carbon adsorption	8.20
171	ILD000608471	100	23,865	0.00009	0.064	434	5.0	M085	Off site	Other aqueous organic treatment	8.14
172	MAD019371079	94	22,490	0.00009	0.060	409	4.7	M099	Off site	Other aqueous organic/inorganic treatment	7.67
173	VAD982362428	93	22,354	0.00009	0.060	406	4.7	M081	Off site	Biological treatment	7.63
174	ILD005083316	91	21,895	0.00008	0.058	398	4.6	M094	Off site	Other aqueous organic/inorganic treatment	7.47
175	TXD056542749	87	20,899	0.00008	0.056	380		M071	On site	Chemical precipitation	7.13
176	MAD980912323	85	20,414	0.00008	0.055	371	4.3	M081	Off site	Biological treatment	6.97
177	PAD002311884	82	19,730	0.00008	0.053	359	4.1	M094	Off site	Other aqueous organic/inorganic treatment	6.73
178	NYD980592497	81	19,515	0.00008	0.052	355		M136	On site	Direct discharge to surface water under NPDES	0.00
179	WID000808824	79	19,038	0.00007	0.051	346	4.0	M094	Off site	Other aqueous organic/inorganic treatment	6.50
180	CTD055310759	79	18,870	0.00007	0.050	343	3.9	M092	Off site	Chemical precipitation in combination with carbon adsorption	6.44
181	MOD071987416	76	18,200	0.00007	0.049	331	3.8	M081	Off site	Biological treatment	6.21
182	TXD058276130	76	18,153	0.00007	0.048	330	3.8	M134	Off site	Deepwell injection	0.00
183	GAD051010429	74	17,677	0.00007	0.047	321	3.7	M091	Off site	Chemical precipitation in combination with biological treatment	6.03
184	NYD980592497	73	17,465	0.00007	0.047	318		M136	On site	Direct discharge to surface	0.00

										water under NPDES	
185	IND000646943	69	16,439	0.00006	0.044	299	3.4	M082	Off site	Carbon adsorption	5.61
186	IND000646943	67	16,151	0.00006	0.043	294	3.4	M082	Off site	Carbon adsorption	5.51
187	NYD980592497	63	15,000	0.00006	0.040	273		M136	On site	Direct discharge to surface water under NPDES	0.00
188	TXD052649027	60	14,487	0.00006	0.039	263	3.0	M134	Off site	Deepwell injection	0.00
189	CTD980668198	58	13,834	0.00005	0.037	252	2.9	M134	Off site	Deepwell injection	0.00
190	NJD002147023	56	13,428	0.00005	0.036	244	2.8	M089	Off site	Other aqueous organic treatment	4.58
191	CAD981375983	54	13,050	0.00005	0.035	237		M092	On site	Chemical precipitation in combination with carbon adsorption	4.45
192	FLD982102295	52	12,500	0.00005	0.033	227		M135	On site	Direct discharge to sewer/POTW	0.00
193	CTD000604488	51	12,119	0.00005	0.032	220	2.5	M085	Off site	Other aqueous organic treatment	4.14
194	NYD003930849	50.0	12,000	0.00005	0.032	218		M136	On site	Direct discharge to surface water under NPDES	0.00
195	ALD983176520	50.0	11,990	0.00005	0.032	218		M077	On site	Chemical precipitation	4.09
196	NYD980592497	49.2	11,810	0.00005	0.032	215		M136	On site	Direct discharge to surface water under NPDES	0.00
197	IND000646943	49.1	11,777	0.00005	0.031	214	2.5	M082	Off site	Carbon adsorption	4.02
198	OHD066060609	48.0	11,511	0.00004	0.031	209	2.4	M094	Off site	Other aqueous organic/inorganic treatment	3.93
199	NYD980592497	46.9	11,250	0.00004	0.030	205		M136	On site	Direct discharge to surface water under NPDES	0.00
200	MAD001402320	46.8	11,228	0.00004	0.030	204	2.3	M079	Off site	Other aqueous treatment	3.83
201	IND000646943	46.3	11,113	0.00004	0.030	202	2.3	M082	Off site	Carbon adsorption	3.79
202	LAD000757286	45.3	10,856	0.00004	0.029	197	2.3	M134	Off site	Deepwell injection	0.00
203	ILD000608471	45.2	10,848	0.00004	0.029	197	2.3	M085	Off site	Other aqueous organic treatment	3.70
204	MID083684290	45.1	10,815	0.00004	0.029	197	2.3	M074	Off site	Chemical precipitation	3.69
205	IND000646943	44.8	10,731	0.00004	0.029	195	2.2	M082	Off site	Carbon adsorption	3.66
206	RID058065707	44.5	10,662	0.00004	0.028	194	2.2	M081	Off site	Biological treatment	3.64
207	IND000646943	43.7	10,484	0.00004	0.028	191	2.2	M082	Off site	Carbon adsorption	3.58

208	ILD000608471	42.4	10,168	0.00004	0.027	185	2.1	M085	Off site	Other aqueous organic treatment	3.47
209	NJD002147023	42.0	10,071	0.00004	0.027	183	2.1	M089	Off site	Other aqueous organic treatment	3.44
210	PAD980550412	41.7	10,000	0.00004	0.027	182	2.1	M081	Off site	Biological treatment	3.41
211	OKD079986568	41.7	9,998	0.00004	0.027	182	2.1	M082	Off site	Carbon adsorption	3.41
212	CTD001840974	41.0	9,842	0.00004	0.026	179	2.1	M094	Off site	Other aqueous organic/inorganic treatment	3.36
213	CTD000604488	40.0	9,600	0.00004	0.026	175	2.0	M077	Off site	Chemical precipitation	3.28
214	ILD000608471	40.0	9,593	0.00004	0.026	174	2.0	M085	Off site	Other aqueous organic treatment	3.27
215	NYD000707901	38.5	9,233	0.00004	0.025	168	1.9	M085	Off site	Other aqueous organic treatment	3.15
216	KSD007246846	37.0	8,875	0.00003	0.024	161	1.9	M091	Off site	Chemical precipitation in combination with biological treatment	3.03
217	OHD000816629	36.2	8,680	0.00003	0.023	158	1.8	M099	Off site	Other aqueous organic/inorganic treatment	2.96
218	TXD056542749	34.9	8,360	0.00003	0.022	152		M071	On site	Chemical precipitation	2.85
219	TXD056542749	34.9	8,360	0.00003	0.022	152		M071	On site	Chemical precipitation	2.85
220	CTD001449784	34.6	8,301	0.00003	0.022	151	1.7	M085	Off site	Other aqueous organic treatment	2.83
221	TXD052649027	33.0	7,923	0.00003	0.021	144	1.7	M089	Off site	Other aqueous organic treatment	2.70
222	IND000646943	33.0	7,920	0.00003	0.021	144	1.7	M092	Off site	Chemical precipitation in combination with carbon adsorption	2.70
223	NYD003930849	32.0	7,680	0.00003	0.021	140		M136	On site	Direct discharge to surface water under NPDES	0.00
224	MAR000007559	30.6	7,330	0.00003	0.020	133		M135	On site	Direct discharge to sewer/POTW	0.00
225	MAD053452637	27.1	6,500	0.00003	0.017	118	1.4	M085	Off site	Other aqueous organic treatment	2.22
226	NYD980592497	26.8	6,424	0.00002	0.017	117		M136	On site	Direct discharge to surface water under NPDES	0.00
227	NYD002067932	25.7	6,163	0.00002	0.016	112	1.3	M099	Off site	Other aqueous organic/inorganic treatment	2.10

228	OHD980681571	25.6	6,131	0.00002	0.016	111	1.3	M094	Off site	Other aqueous organic/inorganic treatment	2.09
229	KSD007246846	25.5	6,112	0.00002	0.016	111	1.3	M089	Off site	Other aqueous organic treatment	2.09
230	VAD980831176	24.0	5,747	0.00002	0.015	104		M082	On site	Carbon adsorption	1.96
231	IND000646943	23.1	5,535	0.00002	0.015	101	1.2	M082	Off site	Carbon adsorption	1.89
232	ILD000608471	22.4	5,374	0.00002	0.014	98	1.1	M085	Off site	Other aqueous organic treatment	1.83
233	ILD000608471	22.4	5,372	0.00002	0.014	98	1.1	M085	Off site	Other aqueous organic treatment	1.83
234	ILD000608471	22.0	5,276	0.00002	0.014	96	1.1	M085	Off site	Other aqueous organic treatment	1.80
235	MID083684290	21.9	5,250	0.00002	0.014	95	1.1	M074	Off site	Chemical precipitation	1.79
236	KSD980854285	21.8	5,216	0.000020	0.014	95	1.1	M082	Off site	Carbon adsorption	1.78
237	IND000646943	21.5	5,147	0.000020	0.014	94	1.1	M082	Off site	Carbon adsorption	1.76
238	MOD071987416	21.0	5,031	0.000019	0.013	91	1.05	M091	Off site	Chemical precipitation in combination with biological treatment	1.72
239	NYD980592497	20.9	5,000	0.000019	0.013	91		M136	On site	Direct discharge to surface water under NPDES	0.00
240	NJD002385730	20.9	5,000	0.000019	0.013	91		M094	On site	Other aqueous organic/inorganic treatment	1.71
241	ILD000608471	20.8	4,988	0.000019	0.013	91	1.04	M085	Off site	Other aqueous organic treatment	1.70
242	ILD000608471	20.8	4,988	0.000019	0.013	91	1.04	M085	Off site	Other aqueous organic treatment	1.70
243	FL6170024412	20.5	4,918	0.000019	0.013	89	1.03	M134	Off site	Deepwell injection	0.00
244	MAR000007955	20.5	4,916	0.000019	0.013	89	1.03	M083	Off site	Air/steam stripping	1.68
245	MAD000604447	20.4	4,894	0.000019	0.013	89	1.02	M078	Off site	Other aqueous treatment	1.67
246	ILD000608471	20.4	4,892	0.000019	0.013	89	1.02	M085	Off site	Other aqueous organic treatment	1.67
247	MAD019371079	20.2	4,848	0.000019	0.013	88	1.01	M099	Off site	Other aqueous organic/inorganic treatment	1.65
248	ILD000608471	20.0	4,796	0.000018	0.013	87	1.00	M085	Off site	Other aqueous organic treatment	1.64
249	IND000646943	20.0	4,793	0.000018	0.013	87	1.00	M092	Off site	Chemical precipitation in combination with carbon	1.64

										adsorption	
250	CTD980668198	19.9	4,770	0.000018	0.013	87	0.99	M092	Off site	Chemical precipitation in combination with carbon adsorption	1.63
251	ILD000608471	19.2	4,604	0.000018	0.012	84	0.96	M085	Off site	Other aqueous organic treatment	1.57
252	ILD000608471	19.2	4,604	0.000018	0.012	84	0.96	M085	Off site	Other aqueous organic treatment	1.57
253	VAR000004978	19.1	4,590	0.000018	0.012	83	0.96	M082	Off site	Carbon adsorption	1.57
254	ILD000608471	18.8	4,509	0.000017	0.012	82	0.94	M085	Off site	Other aqueous organic treatment	1.54
255	ILD000608471	18.8	4,509	0.000017	0.012	82	0.94	M085	Off site	Other aqueous organic treatment	1.54
256	OKD987083946	18.8	4,501	0.000017	0.012	82	0.94	M134	Off site	Deepwell injection	0.00
257	CA7170090016	18.7	4,487	0.000017	0.012	82		M135	On site	Direct discharge to sewer/POTW	0.00
258	TXD056542749	17.4	4,180	0.000016	0.011	76		M071	On site	Chemical precipitation	1.43
259	IND000646943	17.2	4,125	0.000016	0.011	75	0.86	M092	Off site	Chemical precipitation in combination with carbon adsorption	1.41
260	DED053304770	17.1	4,110	0.000016	0.011	75		M135	On site	Direct discharge to sewer/POTW	0.00
261	FLD980729610	17.1	4,098	0.000016	0.011	75	0.85	M081	Off site	Biological treatment	1.40
262	NJD006980924	17.0	4,070	0.000016	0.011	74		M082	On site	Carbon adsorption	1.39
263	UTD001705029	16.5	3,963	0.000015	0.011	72		M135	On site	Direct discharge to sewer/POTW	0.00
264	IND000646943	15.8	3,789	0.000015	0.010	69	0.79	M092	Off site	Chemical precipitation in combination with carbon adsorption	1.29
265	PAD004498432	15.6	3,750	0.000014	0.010	68	0.78	M081	Off site	Biological treatment	1.28
266	IND085616837	14.9	3,567	0.000014	0.010	65	0.74	M085	Off site	Other aqueous organic treatment	1.22
267	ILD000608471	14.8	3,549	0.000014	0.009	65	0.74	M085	Off site	Other aqueous organic treatment	1.21
268	GAR000012336	14.8	3,549	0.000014	0.009	65	0.74	M082	Off site	Carbon adsorption	1.21
269	NCD986177061	14.4	3,460	0.000013	0.009	63	0.72	M085	Off site	Other aqueous organic treatment	1.18

270	IND000646943	14.3	3,427	0.000013	0.009	62	0.71	M082	Off site	Carbon adsorption	1.17
271	IND000646943	14.1	3,384	0.000013	0.009	62	0.71	M082	Off site	Carbon adsorption	1.15
272	ILD000608471	13.6	3,262	0.000013	0.009	59	0.68	M085	Off site	Other aqueous organic treatment	1.11
273	TXD052649027	13.4	3,206	0.000012	0.009	58	0.67	M091	Off site	Chemical precipitation in combination with biological treatment	1.09
274	IND000646943	13.3	3,187	0.000012	0.009	58	0.66	M082	Off site	Carbon adsorption	1.09
275	IND000646943	13.0	3,108	0.000012	0.008	57	0.65	M082	Off site	Carbon adsorption	1.060
276	TXD052649027	12.6	3,024	0.000012	0.008	55	0.63	M079	Off site	Other aqueous treatment	1.032
277	IND000646943	12.2	2,923	0.000011	0.008	53	0.61	M082	Off site	Carbon adsorption	0.997
278	CAD982437089	12.1	2,900	0.000011	0.008	53	0.60	M071	Off site	Chemical precipitation	0.990
279	CTD000845198	11.9	2,854	0.000011	0.008	52	0.59	M092	Off site	Chemical precipitation in combination with carbon adsorption	0.974
280	NYD980592497	11.7	2,809	0.000011	0.008	51		M136	On site	Direct discharge to surface water under NPDES	0.000
281	NYD000809350	11.1	2,662	0.000010	0.0071	48	0.56	M083	Off site	Air/steam stripping	0.908
282	LAD000757286	10.7	2,574	0.000010	0.0069	47		M136	On site	Direct discharge to surface water under NPDES	0.000
283	NJD002385730	10.4	2,500	0.000010	0.0067	45		M094	On site	Other aqueous organic/inorganic treatment	0.853
284	TXD062128004	10.3	2,477	0.000010	0.0066	45	0.52	M134	Off site	Deepwell injection	0.000
285	OHD000816629	10.3	2,458	0.000009	0.0066	45	0.51	M099	Off site	Other aqueous organic/inorganic treatment	0.839
286	NYD980592497	10.0	2,400	0.000009	0.0064	44		M136	On site	Direct discharge to surface water under NPDES	0.000
287	TND982109142	9.22	2,211	0.000009	0.0059	40		M134	On site	Deepwell injection	0.000
288	CTD000604488	9.06	2,173	0.000008	0.0058	40	0.45	M085	Off site	Other aqueous organic treatment	0.742
289	CTD000844332	9.02	2,163	0.000008	0.0058	39	0.45	M094	Off site	Other aqueous organic/inorganic treatment	0.738
290	TXD077603371	8.51	2,041	0.000008	0.0055	37	0.43	M121	Off site	Neutralization only	0.696
291	CTD001139617	8.04	1,928	0.000007	0.0051	35	0.40	M099	Off site	Other aqueous organic/inorganic treatment	0.658
292	NYD002211324	7.82	1,875	0.000007	0.0050	34	0.39	M085	Off site	Other aqueous organic	0.640

										treatment	
293	CAD000627273	7.76	1,861	0.000007	0.0050	34	0.39	M084	Off site	Wet air oxidation	0.635
294	FLD980729610	7.72	1,851	0.000007	0.0049	34	0.39	M081	Off site	Biological treatment	0.632
295	NYD980592497	7.61	1,825	0.000007	0.0049	33		M136	On site	Direct discharge to surface water under NPDES	0.000
296	PAD001887579	6.74	1,615	0.000006	0.0043	29	0.34	M085	Off site	Other aqueous organic treatment	0.551
297	CAD049904766	6.66	1,598	0.000006	0.0043	29	0.33	M099	Off site	Other aqueous organic/inorganic treatment	0.545
298	NYD980592497	6.31	1,514	0.000006	0.0040	28		M136	On site	Direct discharge to surface water under NPDES	0.000
299	KSD007246846	5.88	1,410	0.000005	0.0038	26	0.29	M091	Off site	Chemical precipitation in combination with biological treatment	0.481
300	NYD980592497	5.66	1,358	0.000005	0.0036	25		M136	On site	Direct discharge to surface water under NPDES	0.000
301	MED985467935	5.65	1,355	0.000005	0.0036	25	0.28	M099	Off site	Other aqueous organic/inorganic treatment	0.462
302	NYD002211324	5.25	1,260	0.000005	0.0034	23	0.26	M085	Off site	Other aqueous organic treatment	0.430
303	MSD054179403	5.20	1,247	0.000005	0.0033	23		M081	On site	Biological treatment	0.426
304	NYD000098558	5.14	1,233	0.000005	0.0033	22	0.26	M089	Off site	Other aqueous organic treatment	0.421
305	PAD067098822	5.05	1,212	0.000005	0.0032	22	0.25	M078	Off site	Other aqueous treatment	0.413
306	WID068318146	4.80	1,151	0.000004	0.0031	21	0.24	M085	Off site	Other aqueous organic treatment	0.393
307	UTD001705029	4.73	1,133	0.000004	0.0030	21		M135	On site	Direct discharge to sewer/POTW	0.000
308	OHD066060609	4.64	1,113	0.000004	0.0030	20	0.23	M094	Off site	Other aqueous organic/inorganic treatment	0.380
309	ILD000608471	4.40	1,055	0.000004	0.0028	19	0.22	M085	Off site	Other aqueous organic treatment	0.360
310	IND000646943	4.26	1,022	0.000004	0.0027	19	0.21	M092	Off site	Chemical precipitation in combination with carbon adsorption	0.349
311	NYD980592497	4.24	1,016	0.000004	0.0027	18		M136	On site	Direct discharge to surface water under NPDES	0.000

312	OHD052324290	4.16	998	0.000004	0.0027	18	0.21	M134	Off site	Deepwell injection	0.000
313	OHD980681571	4.15	995	0.000004	0.0027	18	0.21	M094	Off site	Other aqueous organic/inorganic treatment	0.339
314	OHD066060609	4.11	986	0.000004	0.0026	18	0.21	M094	Off site	Other aqueous organic/inorganic treatment	0.336
315	MID000820381	3.82	915	0.000004	0.0024	17		M134	On site	Deepwell injection	0.000
316	NYD003930849	3.36	805	0.000003	0.0022	15		M136	On site	Direct discharge to surface water under NPDES	0.000
317	NYD980592497	3.21	770	0.000003	0.0021	14		M136	On site	Direct discharge to surface water under NPDES	0.000
318	ILD000608471	3.00	719	0.000003	0.0019	13	0.15	M085	Off site	Other aqueous organic treatment	0.245
319	ILD000608471	2.88	691	0.000003	0.0018	13	0.14	M085	Off site	Other aqueous organic treatment	0.236
320	NYD080480734	2.86	685	0.000003	0.0018	12	0.14	M089	Off site	Other aqueous organic treatment	0.234
321	ILD000608471	2.76	662	0.000003	0.0018	12	0.14	M085	Off site	Other aqueous organic treatment	0.226
322	IND000646943	2.65	635	0.000002	0.0017	12	0.13	M082	Off site	Carbon adsorption	0.217
323	CT5000001107	2.52	605	0.000002	0.0016	11	0.13	M077	Off site	Chemical precipitation	0.206
324	FLD981474802	2.40	576	0.000002	0.0015	10	0.12	M081	Off site	Biological treatment	0.196
325	CTD001139617	2.28	547	0.000002	0.0015	10.0	0.11	M099	Off site	Other aqueous organic/inorganic treatment	0.187
326	NYD980592497	2.09	500	0.0000019	0.0013	9.1		M136	On site	Direct discharge to surface water under NPDES	0.000
327	OHD005046677	1.96	471	0.0000018	0.0013	8.6	0.10	M099	Off site	Other aqueous organic/inorganic treatment	0.161
328	NY0000926436	1.88	450	0.0000017	0.0012	8.2		M136	On site	Direct discharge to surface water under NPDES	0.000
329	ORD099149445	1.88	450	0.0000017	0.0012	8.2	0.09	M082	Off site	Carbon adsorption	0.154
330	OHD980681571	1.83	440	0.0000017	0.0012	8.0	0.09	M082	Off site	Carbon adsorption	0.150
331	FLD981474802	1.73	415	0.0000016	0.0011	7.5	0.09	M099	Off site	Other aqueous organic/inorganic treatment	0.142
332	OHD980681571	1.60	384	0.0000015	0.0010	7.0	0.08	M094	Off site	Other aqueous organic/inorganic treatment	0.131
333	OHD980681571	1.60	384	0.0000015	0.0010	7.0	0.08	M094	Off site	Other aqueous organic/inorganic treatment	0.131

334	ILD000608471	1.54	369	0.0000014	0.0010	6.7	0.08	M085	Off site	Other aqueous organic treatment	0.126
335	NYD002211324	1.53	366	0.0000014	0.0010	6.6	0.08	M085	Off site	Other aqueous organic treatment	0.125
336	NYD980592497	1.31	315	0.0000012	0.0008	5.7		M136	On site	Direct discharge to surface water under NPDES	0.000
337	NYD980592497	1.29	310	0.0000012	0.0008	5.6		M136	On site	Direct discharge to surface water under NPDES	0.000
338	OHD980681571	1.19	284	0.0000011	0.0008	5.2	0.06	M082	Off site	Carbon adsorption	0.097
339	CT5000001107	1.15	275	0.0000011	0.00073	5.0	0.06	M077	Off site	Chemical precipitation	0.094
340	ILD000608471	1.10	264	0.0000010	0.00070	4.8	0.06	M085	Off site	Other aqueous organic treatment	0.090
341	MD6150004095	1.05	252	0.0000010	0.00067	4.6		M135	On site	Direct discharge to sewer/POTW	0.000
342	NYD980592497	0.92	220	0.0000008	0.00059	4.0		M136	On site	Direct discharge to surface water under NPDES	0.000
343	WAD988478723	0.92	220	0.0000008	0.00059	4.0	0.05	M121	Off site	Neutralization only	0.075
344	NHD500015441	0.90	216	0.0000008	0.00058	3.9	0.05	M075	Off site	Chemical oxidation only	0.074
345	MD6150004095	0.88	211	0.0000008	0.00056	3.8		M135	On site	Direct discharge to sewer/POTW	0.000
346	OHD980681571	0.88	210	0.0000008	0.00056	3.8	0.04	M094	Off site	Other aqueous organic/inorganic treatment	0.072
347	TXD050858182	0.83	199	0.0000008	0.00053	3.6	0.04	M074	Off site	Chemical precipitation	0.068
348	NYD053719894	0.83	199	0.0000008	0.00053	3.6	0.04	M085	Off site	Other aqueous organic treatment	0.068
349	ILD005158274	0.77	184	0.0000007	0.00049	3.3	0.04	M099	Off site	Other aqueous organic/inorganic treatment	0.063
350	NYD980592497	0.68	162	0.0000006	0.00043	2.9		M136	On site	Direct discharge to surface water under NPDES	0.000
351	NYD980592497	0.66	159	0.0000006	0.00042	2.9		M136	On site	Direct discharge to surface water under NPDES	0.000
352	ILD000608471	0.66	158	0.0000006	0.00042	2.9	0.03	M085	Off site	Other aqueous organic treatment	0.054
353	NYD080480734	0.60	144	0.0000006	0.00038	2.6	0.03	M089	Off site	Other aqueous organic treatment	0.049
354	OHD980681571	0.50	120	0.0000005	0.00032	2.2	0.03	M094	Off site	Other aqueous organic/inorganic treatment	0.041

355	NYD002211324	0.49	118	0.0000005	0.00031	2.1	0.02	M078	Off site	Other aqueous treatment	0.040
356	WAD009249863	0.48	116	0.0000004	0.00031	2.1	0.02	M082	Off site	Carbon adsorption	0.039
357	CTD001186212	0.46	110	0.0000004	0.00029	2.0	0.02	M085	Off site	Other aqueous organic treatment	0.038
358	ALD000622464	0.46	110	0.0000004	0.00029	2.0	0.02	M079	Off site	Other aqueous treatment	0.038
359	OHD980681571	0.45	108	0.0000004	0.00029	2.0	0.02	M094	Off site	Other aqueous organic/inorganic treatment	0.037
360	ILD000608471	0.44	106	0.0000004	0.00028	1.9	0.02	M085	Off site	Other aqueous organic treatment	0.036
361	NYD980592497	0.42	100	0.0000004	0.00027	1.8		M136	On site	Direct discharge to surface water under NPDES	0.000
362	AKD009252230	0.41	98	0.0000004	0.00026	1.8	0.02	M082	Off site	Carbon adsorption	0.033
363	ORD009227398	0.31	75	0.0000003	0.00020	1.4	0.02	M082	Off site	Carbon adsorption	0.0254
364	GAD980845077	0.30	73	0.0000003	0.00019	1.3	0.02	M099	Off site	Other aqueous organic/inorganic treatment	0.0248
365	PAD003038056	0.30	72	0.0000003	0.00019	1.3	0.02	M091	Off site	Chemical precipitation in combination with biological treatment	0.0245
366	NYD980592497	0.29	70	0.0000003	0.00019	1.3		M136	On site	Direct discharge to surface water under NPDES	0.0000
367	CTD001149277	0.23	56	0.0000002	0.00015	1.0	0.012	M094	Off site	Other aqueous organic/inorganic treatment	0.0190
368	GAD981224991	0.23	54	0.0000002	0.00014	1.0	0.011	M075	Off site	Chemical oxidation only	0.0184
369	PAD987271848	0.23	54	0.0000002	0.00014	1.0	0.011	M094	Off site	Other aqueous organic/inorganic treatment	0.0184
370	ILD000608471	0.22	53	0.0000002	0.00014	1.0	0.011	M085	Off site	Other aqueous organic treatment	0.0180
371	CT5000001107	0.21	50	0.00000019	0.00013	0.9	0.010	M077	Off site	Chemical precipitation	0.0171
372	TXD050858182	0.20	48	0.00000018	0.00013	0.9	0.010	M077	Off site	Chemical precipitation	0.0164
373	MID980683775	0.20	47	0.00000018	0.00013	0.9	0.010	M091	Off site	Chemical precipitation in combination with biological treatment	0.0161
374	WA0000189431	0.19	47	0.00000018	0.00012	0.8	0.010	M082	Off site	Carbon adsorption	0.0160
375	NYD002211324	0.18	43	0.00000017	0.00012	0.8	0.009	M085	Off site	Other aqueous organic treatment	0.0148
376	NYD980592497	0.17	40	0.00000015	0.00011	0.7		M136	On site	Direct discharge to surface water under NPDES	0.0000

377	CTD001169010	0.10	24	0.00000009	0.00006	0.4	0.005	M077	Off site	Chemical precipitation	0.0082
378	NYD980592497	0.10	24	0.00000009	0.00006	0.4		M136	On site	Direct discharge to surface water under NPDES	0.0000
379	NYD980592497	0.08	20	0.00000008	0.00005	0.4		M136	On site	Direct discharge to surface water under NPDES	0.0000
380	NYD980592497	0.06	15	0.00000006	0.00004	0.3		M136	On site	Direct discharge to surface water under NPDES	0.0000
381	ILD000608471	0.04	10	0.00000004	0.00003	0.2	0.002	M085	Off site	Other aqueous organic treatment	0.00327
382	NYD980592497	0.02	5	0.000000018	0.000012	0.1		M136	On site	Direct discharge to surface water under NPDES	0.00000
383	NYD980592497	0.01	2	0.000000006	0.000004	0.0		M136	On site	Direct discharge to surface water under NPDES	0.00000
Column totals =		51,496,157	12,349,198,388	47	32,984	224,530,880	1,454				3,631,822

**Explanatory Notes:**

- a) \* Wastewater:to:sludge generation ratio represents a median of 2.4% solid & organic matter in wastewaters, and a median 30.0% solid & organic matter in sludges (based on USEPA Office of Solid Waste 1996 "National Hazardous Waste Constituent Survey" database). In comparison, typical municipal wastewaters are 0.02% solid & organic matter, and typical municipal raw sludges are 4% solid & organic matter (source: Viessman & Hammer, "Water Supply & Pollution Control", Harper Collins, 1985, p.572).
- b) \*\* Imputed sludge quantities in this table are based on OSW's estimation method applying a survey sample derived median wastewater:to:sludge generation ratio, which may not accurately represent sludge quantities for any single facility in this table, but may serve to approximate overall total sludge volumes generated. Furthermore, not every facility on this list may generate a spent solvent wastewater treatment sludge because some facilities manage these wastewaters offsite, and/or some facilities manage these wastewaters in units which do not necessarily generate a sludge (e.g. liquid combustion unit or deepwell injection). Consequently, the imputed sludge quantities displayed in this table represent hypothetical quantities of sludge which may be generated if the spent solvent wastewaters were hypothetically managed in wastewater treatment units which generated sludge as a by-product of the unit's operation (e.g. wastewater biological treatment units).

Hypothetical Wastewater Mangement Cost Savings Benchmark: If Revised “Headworks Exemption” Hypothetically Applied to All F002 and F005 Aqueous Spent Solvent Wastestreams Currently Managed in Wastewater Treatment Systems (year 2000\$)											
			A	B	C	D	E	F	G	H	I
Discount rate for annualizing capital costs>				3%		\$18/ton	\$300/trip	\$252/ton	< Key unit cost factors*		
Waste stream item	EPA_ID	1997 aqueous F002 or F005 spent solvent managed (tons/year)	RCRA hazardous waste water manage-ment system capital cost**	RCRA hazardous waste water management system capital cost** (annualized over 10 years)	RCRA hazardous waste water management system annual O&M cost**	Annual trucking costs for offsite manage-ment***	Annual RCRA manifest cost for offsite shipping	NOTE: The costs in these columns are HYPOTHETICAL premised on all imputed wastewater sludge quantities: (1) hypothetically generated by wastewater treatment units, and (2) managed as RCRA hazardous wastes			
								Hypothetical sludge management cost if RCRA haz waste (\$ per year)	Hypothetical cnsite + offsite total annual waste management cost (B+...+F)	Hypothetical annual cost for management as non-haz waste (in surface impound-ments)	Hypothetical potential annnual cost savings (G - H)
1	TND003376928	42,712,496	\$11,322,763	\$1,260,524	\$14,444,251			\$880,758,023	\$896,462,799	\$5,343,333	\$891,119,466
2	PAD003043353	2,485,320	\$0	\$0	\$1,317,652			\$0	\$1,317,652	\$621,827	\$695,824
3	NYD003930849	717,097	\$0	\$0	\$506,915			\$0	\$506,915	\$239,224	\$267,691
4	NYR000030726	583,820	\$338,068	\$37,636	\$638,647			\$12,038,726	\$12,715,008	\$584,287	\$12,130,722
5	NYD059385120	557,330	\$0	\$0	\$1,181,927			\$0	\$1,181,927	\$557,776	\$624,151
6	NYD002211324	498,170	\$0	\$0	\$1,056,467			\$0	\$1,056,467	\$498,569	\$557,898
7	IND000806935	443,616	\$0	\$0	\$940,773			\$0	\$940,773	\$443,970	\$496,803
8	MAD001402320	371,026	\$0	\$0	\$786,833			\$0	\$786,833	\$371,323	\$415,510
9	ALD079109013	343,704	\$82,464	\$9,180	\$26,026			\$7,087,392	\$7,122,598	\$343,979	\$6,778,619
10	GAD039046800	303,995	\$0	\$0	\$644,681			\$0	\$644,681	\$304,238	\$340,443
11	PAD043882323	208,333	\$0	\$0	\$441,811			\$0	\$441,811	\$208,500	\$233,311
12	CAD093365435	207,042	\$82,464	\$9,180	\$26,026			\$4,269,328	\$4,304,534	\$207,207	\$4,097,327
13	LA4800014587	206,023	\$0	\$0	\$436,912			\$0	\$436,912	\$206,188	\$230,724
14	CA1800090010	154,953	\$82,464	\$9,180	\$26,026			\$3,195,224	\$3,230,430	\$155,077	\$3,075,354
15	IND006050967	150,182	\$0	\$0	\$318,490			\$0	\$318,490	\$197,271	\$121,218
16	MAD058060476	129,000	\$0	\$0	\$273,570			\$0	\$273,570	\$129,103	\$144,466
17	IND006050967	124,053	\$0	\$0	\$263,079			\$0	\$263,079	\$124,152	\$138,926
18	NYD980592497	105,064	\$0	\$0	\$222,809			\$0	\$222,809	\$105,148	\$117,661
19	ORD009023466	101,312	\$0	\$0	\$214,852			\$0	\$214,852	\$101,393	\$113,459
20	NYD980592497	93,607	\$0	\$0	\$198,513			\$0	\$198,513	\$93,682	\$104,830

21	CAD093365435	88,291	\$96,083	\$10,697	\$94,014			\$1,820,625	\$1,925,336	\$88,362	\$1,836,974
22	NCD003217437	75,063	\$0	\$0	\$159,185			\$0	\$159,185	\$75,123	\$84,062
23	MAD001923408	74,854	\$0	\$0	\$108,833			\$0	\$108,833	\$74,914	\$33,919
24	NYD002220804	65,291	\$8,958	\$997	\$73,788			\$1,346,336	\$1,421,122	\$65,343	\$1,355,779
25	NYD003930849	55,311	\$0	\$0	\$117,297			\$0	\$117,297	\$55,355	\$61,942
26	NCD051330280	51,782	\$0	\$0	\$109,814			\$0	\$109,814	\$51,824	\$57,991
27	MAD000846493	47,726	\$58,753	\$6,541	\$20,407			\$984,150	\$1,011,098	\$47,765	\$963,333
28	MAD001033190	45,377	\$0	\$0	\$96,230			\$0	\$96,230	\$45,413	\$50,817
29	OKD079986568	37,654	\$0	\$0	\$79,852			\$0	\$79,852	\$37,684	\$42,168
30	COD076470525	31,097	\$57,251	\$6,374	\$41,794			\$641,240	\$689,408	\$40,848	\$648,560
31	MAD062163191	29,372	\$0	\$0	\$62,290			\$0	\$62,290	\$29,396	\$32,894
32	NYD002211324	28,298	\$0	\$0	\$60,011			\$0	\$60,011	\$28,321	\$31,691
33	NYD084006741	27,443	\$8,867	\$987	\$5,167			\$565,888	\$572,042	\$27,465	\$544,577
34	NYD980592497	23,803	\$0	\$0	\$50,479			\$0	\$50,479	\$23,822	\$26,657
35	NJD002385730	23,656	\$52,199	\$5,811	\$34,527			\$487,810	\$528,148	\$23,675	\$504,473
36	NYD980592497	22,031	\$0	\$0	\$46,720			\$0	\$46,720	\$22,048	\$24,672
37	VAD023741705	19,650	\$47,833	\$5,325	\$12,060			\$405,195	\$422,580	\$19,666	\$402,914
38	NYD980592497	16,824	\$0	\$0	\$35,678			\$0	\$35,678	\$16,837	\$18,841
39	NYD980592497	15,494	\$0	\$0	\$32,858			\$0	\$32,858	\$15,507	\$17,352
40	KSD007482011	15,072	\$0	\$0	\$31,964			\$0	\$31,964	\$15,084	\$16,879
41	MND000819268	15,007	\$47,833	\$5,325	\$12,060			\$309,446	\$326,831	\$15,019	\$311,813
42	PAD041399403	14,554	\$0	\$0	\$30,864			\$0	\$30,864	\$14,565	\$16,299
43	FL6170024412	7,503	\$0	\$0	\$15,911			\$0	\$15,911	\$7,509	\$8,402
44	ALD003297116	6,839	\$133,129	\$14,821	\$17,232			\$141,015	\$173,068	\$6,844	\$166,224
45	NYD986954147	6,713	\$0	\$0	\$14,236			\$0	\$14,236	\$6,718	\$7,518
46	NYD980592497	6,365	\$0	\$0	\$13,499			\$0	\$13,499	\$6,370	\$7,129
47	FLD046771952	5,930	\$0	\$0	\$12,576			\$0	\$12,576	\$5,935	\$6,641
48	OKD000632737	5,801	\$0	\$0	\$12,301			\$0	\$12,301	\$5,805	\$6,496
49	NYD041292509	5,472	\$0	\$0	\$11,604			\$0	\$11,604	\$5,476	\$6,128
50	VAD988170445	5,375	\$117,786	\$13,113	\$14,314			\$110,831	\$138,258	\$5,379	\$132,879
51	NYD002100352	4,966	\$47,833	\$5,325	\$12,060			\$102,399	\$119,784	\$4,970	\$114,815

52	NYD059385120	4,863	\$0	\$0	\$10,312			\$0	\$10,312	\$4,867	\$5,446
53	NYD980592497	4,497	\$0	\$0	\$9,537			\$0	\$9,537	\$4,501	\$5,037
54	NYD980592497	4,494	\$0	\$0	\$9,530			\$0	\$9,530	\$4,497	\$5,032
55	NYD980592497	4,492	\$0	\$0	\$9,525			\$0	\$9,525	\$4,495	\$5,030
56	WAR000008979	4,313	\$16,033	\$1,785	\$25,208			\$88,929	\$115,922	\$4,316	\$111,606
57	NYD980592497	3,671	\$0	\$0	\$7,784			\$0	\$7,784	\$3,674	\$4,111
58	NYD980592497	3,435	\$0	\$0	\$7,284			\$0	\$7,284	\$3,437	\$3,846
59	NYD980592497	3,404	\$0	\$0	\$7,218			\$0	\$7,218	\$3,406	\$3,812
60	COD007068646	3,381	\$0	\$0	\$7,170			\$0	\$7,170	\$3,384	\$3,786
61	TXD981512122	3,176	\$90,139	\$10,035	\$9,545			\$65,485	\$85,064	\$3,178	\$81,886
62	UTD009081357	3,048	\$0	\$0	\$6,464			\$0	\$6,464	\$3,051	\$3,414
63	COD980952097	2,998	\$47,833	\$5,325	\$12,060			\$61,828	\$79,213	\$3,001	\$76,212
64	FL6170024412	2,850	\$0	\$0	\$6,044			\$0	\$6,044	\$2,852	\$3,192
65	CAD000030494	2,848	\$15,840	\$1,763	\$23,684			\$58,735	\$84,182	\$2,851	\$81,332
66	CA1800090010	2,810	\$38,046	\$4,235	\$13,586			\$57,941	\$75,762	\$2,812	\$72,950
67	TXD077603371	2,801	\$0	\$0	\$8,664	\$50,414	\$42,012	\$0	\$101,090	\$2,803	\$98,287
68	NYD980592497	2,671	\$0	\$0	\$5,664			\$0	\$5,664	\$2,673	\$2,991
69	NYD000824482	2,096	\$0	\$0	\$4,444			\$0	\$4,444	\$2,097	\$2,347
70	NED981723513	2,060	\$37,537	\$4,179	\$12,817	\$37,080	\$30,900	\$42,478	\$127,454	\$2,706	\$124,748
71	FLD004073177	1,969	\$0	\$0	\$4,175			\$0	\$4,175	\$1,970	\$2,205
72	GAD061022216	1,892	\$15,714	\$1,749	\$22,687			\$39,007	\$63,444	\$1,893	\$61,550
73	OHD093945293	1,699	\$0	\$0	\$5,897	\$30,589	\$25,491	\$0	\$61,976	\$2,232	\$59,744
74	NYD980592497	1,674	\$0	\$0	\$3,549			\$0	\$3,549	\$1,675	\$1,874
75	WA7890008967	1,650	\$4,148	\$462	\$12,396			\$34,033	\$46,891	\$1,652	\$45,239
76	NYD980592497	1,591	\$0	\$0	\$3,375			\$0	\$3,375	\$1,593	\$1,782
77	CA7170090016	1,576	\$0	\$0	\$3,342			\$0	\$3,342	\$2,070	\$1,272
78	NYD980592497	1,539	\$0	\$0	\$3,263			\$0	\$3,263	\$1,540	\$1,723
79	UTD001705029	1,522	\$0	\$0	\$3,228			\$0	\$3,228	\$1,524	\$1,705
80	NJD002385730	1,501	\$37,157	\$4,137	\$12,243			\$30,956	\$47,335	\$1,502	\$45,833
81	NYD980592497	1,419	\$0	\$0	\$3,010			\$0	\$3,010	\$1,864	\$1,146
82	TXD077603371	1,293	\$37,016	\$4,121	\$12,029	\$23,283	\$19,402	\$26,672	\$85,507	\$1,295	\$84,213

83	NYD003930849	1,266	\$0	\$0	\$2,685			\$0	\$2,685	\$1,267	\$1,418
84	LAD985218742	1,251	\$0	\$0	\$2,653			\$0	\$2,653	\$1,252	\$1,401
85	MID000820381	1,202	\$0	\$0	\$2,549			\$0	\$2,549	\$1,203	\$1,346
86	NYD980592497	1,084	\$0	\$0	\$2,298			\$0	\$2,298	\$1,084	\$1,213
87	COD000694869	1,001	\$15,596	\$1,736	\$21,759	\$18,011	\$15,010	\$20,634	\$77,150	\$1,314	\$75,836
88	OKD000758599	913	\$47,833	\$5,325	\$12,060			\$18,828	\$36,213	\$914	\$35,299
89	WID000808824	878	\$36,734	\$4,089	\$11,602	\$15,800	\$13,167	\$18,101	\$62,760	\$879	\$61,881
90	WID990829475	878	\$15,580	\$1,734	\$21,631	\$15,798	\$13,165	\$18,098	\$70,428	\$878	\$69,549
91	NYD980592497	848	\$0	\$0	\$1,798			\$0	\$1,798	\$848	\$949
92	CAD000030494	804	\$4,084	\$455	\$11,526			\$16,580	\$28,561	\$805	\$27,756
93	WID000808824	746	\$36,644	\$4,079	\$11,466	\$13,424	\$11,187	\$15,379	\$55,536	\$746	\$54,789
94	GAD003324985	727	\$0	\$0	\$1,541			\$0	\$1,541	\$727	\$814
95	NYD981561962	705	\$36,617	\$4,076	\$11,424	\$12,695	\$10,580	\$14,544	\$53,319	\$706	\$52,614
96	TXD052649027	670	\$0	\$0	\$2,878	\$12,056	\$10,046	\$0	\$24,981	\$670	\$24,310
97	PAD030069140	616	\$36,556	\$4,070	\$11,332	\$11,079	\$9,233	\$12,692	\$48,405	\$616	\$47,789
98	OHD001926740	590	\$36,539	\$4,068	\$11,306	\$10,619	\$8,849	\$12,165	\$47,006	\$590	\$46,415
99	KYD053348108	580	\$8,867	\$987	\$5,167			\$11,964	\$18,119	\$581	\$17,538
100	CAD008302903	563	\$36,520	\$4,066	\$11,278	\$10,128	\$8,440	\$11,602	\$45,512	\$563	\$44,949
101	FL6170024412	552	\$0	\$0	\$1,170			\$0	\$1,170	\$552	\$618
102	NJD056356066	550	\$8,867	\$987	\$5,167	\$9,892	\$8,244	\$11,333	\$35,623	\$550	\$35,073
103	OHD980681571	528	\$36,496	\$4,063	\$11,241	\$9,495	\$7,913	\$10,878	\$43,590	\$528	\$43,062
104	TXD981898760	499	\$47,833	\$5,325	\$12,060	\$8,982	\$7,485	\$10,290	\$44,142	\$499	\$43,642
105	NYD980592497	495	\$0	\$0	\$1,051			\$0	\$1,051	\$496	\$555
106	IND000646943	495	\$8,867	\$987	\$5,167	\$8,910	\$7,425	\$10,208	\$32,697	\$650	\$32,047
107	AZD009015389	487	\$34,765	\$3,870	\$2,254	\$8,775	\$7,312	\$10,052	\$32,263	\$488	\$31,775
108	WVD988776852	476	\$0	\$0	\$2,213	\$8,571	\$7,143	\$0	\$17,927	\$477	\$17,450
109	NYD980592497	473	\$0	\$0	\$1,004			\$0	\$1,004	\$474	\$530
110	UTD001705029	462	\$0	\$0	\$2,163			\$0	\$2,163	\$462	\$1,700
111	NYD003930849	455	\$0	\$0	\$965			\$0	\$965	\$455	\$510
112	NYD980592497	425	\$0	\$0	\$902			\$0	\$902	\$426	\$476
113	GAD003324985	422	\$0	\$0	\$896			\$0	\$896	\$423	\$473

114	AZD009015389	421	\$0	\$0	\$2,012	\$7,571	\$6,309	\$0	\$15,891	\$421	\$15,470
115	UTD001705029	362	\$0	\$0	\$1,793	\$6,521	\$5,435	\$0	\$13,749	\$363	\$13,387
116	GAD033582461	362	\$36,384	\$4,050	\$11,071			\$7,470	\$22,591	\$363	\$22,229
117	WAR000008979	358	\$15,512	\$1,727	\$21,090			\$7,378	\$30,194	\$358	\$29,836
118	PAD030069140	353	\$36,378	\$4,050	\$11,062	\$6,352	\$5,294	\$7,277	\$34,034	\$353	\$33,681
119	FL6170024412	348	\$0	\$0	\$739			\$0	\$739	\$349	\$390
120	ILD980613913	347	\$0	\$0	\$1,736	\$6,251	\$5,209	\$0	\$13,196	\$348	\$12,848
121	OHD066060609	341	\$36,369	\$4,049	\$11,049	\$6,136	\$5,114	\$7,030	\$33,378	\$448	\$32,930
122	ILD005083316	334	\$36,365	\$4,048	\$11,043	\$6,020	\$5,017	\$6,896	\$33,024	\$335	\$32,689
123	OHD980681571	332	\$36,363	\$4,048	\$11,040	\$5,975	\$4,979	\$6,845	\$32,887	\$332	\$32,555
124	PRD090036021	295	\$0	\$0	\$625			\$0	\$625	\$295	\$330
125	WID990829475	288	\$15,502	\$1,726	\$21,017	\$5,179	\$4,316	\$5,933	\$38,171	\$288	\$37,883
126	CTD064828726	284	\$0	\$0	\$602			\$0	\$602	\$284	\$318
127	OHD004182408	278	\$36,327	\$4,044	\$10,985	\$5,011	\$4,176	\$5,740	\$29,956	\$279	\$29,678
128	OKD981909849	276	\$0	\$0	\$1,454	\$4,967	\$4,139	\$0	\$10,560	\$276	\$10,283
129	MAD000844597	275	\$26,001	\$2,895	\$1,451	\$4,956	\$4,130	\$5,677	\$19,108	\$276	\$18,833
130	WID990829475	260	\$15,499	\$1,725	\$20,988	\$4,680	\$3,900	\$5,362	\$36,655	\$260	\$36,395
131	MAR000007955	259	\$47,833	\$5,325	\$12,060	\$4,663	\$3,886	\$5,342	\$31,276	\$259	\$31,017
132	MAD980912323	256	\$15,498	\$1,725	\$20,983	\$4,603	\$3,835	\$5,273	\$36,419	\$256	\$36,163
133	RID058065707	251	\$24,816	\$2,763	\$1,352	\$4,521	\$3,768	\$5,179	\$17,583	\$251	\$17,332
134	OKD089761290	251	\$0	\$0	\$1,352	\$4,518	\$3,765	\$0	\$9,634	\$330	\$9,305
135	NYD980592497	248	\$0	\$0	\$525			\$0	\$525	\$248	\$277
136	IND000646943	242	\$15,496	\$1,725	\$20,969	\$4,363	\$3,636	\$4,998	\$35,692	\$318	\$35,373
137	NYD002081396	239	\$47,833	\$5,325	\$12,060			\$4,926	\$22,311	\$239	\$22,072
138	MND985694736	237	\$4,041	\$450	\$10,942			\$4,887	\$16,279	\$237	\$16,042
139	WAR000008979	223	\$15,494	\$1,725	\$20,949			\$4,600	\$27,275	\$223	\$27,051
140	MAD980912323	219	\$15,493	\$1,725	\$20,945	\$3,949	\$3,291	\$4,524	\$34,434	\$220	\$34,215
141	IND085616837	200	\$36,274	\$4,038	\$10,904	\$3,593	\$2,994	\$4,116	\$25,644	\$200	\$25,444
142	ILD980613913	190	\$36,267	\$4,037	\$10,894	\$3,416	\$2,847	\$3,914	\$25,108	\$190	\$24,918
143	CTD001449784	186	\$36,264	\$4,037	\$10,890	\$3,346	\$2,789	\$3,833	\$24,895	\$186	\$24,709
144	MAD001402320	186	\$36,264	\$4,037	\$10,889	\$3,343	\$2,786	\$3,830	\$24,886	\$186	\$24,700

145	PAD980551964	183	\$21,131	\$2,352	\$1,060	\$3,296	\$2,746	\$3,776	\$13,230	\$183	\$13,047
146	OHD004172565	183	\$36,262	\$4,037	\$10,886	\$3,289	\$2,741	\$3,767	\$24,720	\$240	\$24,480
147	NYD980592497	182	\$0	\$0	\$386			\$0	\$386	\$182	\$204
148	NYD980592497	181	\$0	\$0	\$383			\$0	\$383	\$181	\$202
149	FL6170024412	178	\$0	\$0	\$1,038	\$3,205	\$2,671	\$0	\$6,914	\$178	\$6,736
150	NYD980592497	170	\$0	\$0	\$360			\$0	\$360	\$170	\$190
151	PAD067362327	161	\$36,247	\$4,035	\$10,864	\$2,894	\$2,411	\$3,315	\$23,519	\$161	\$23,358
152	MAD000844597	151	\$19,149	\$2,132	\$913	\$2,715	\$2,263	\$3,111	\$11,133	\$151	\$10,982
153	IND000646943	142	\$8,867	\$987	\$5,167	\$2,550	\$2,125	\$2,921	\$13,749	\$186	\$13,563
154	NYD980592497	141	\$0	\$0	\$299			\$0	\$299	\$141	\$158
155	NYD980592497	135	\$0	\$0	\$287			\$0	\$287	\$135	\$151
156	NYD980592497	133	\$0	\$0	\$281			\$0	\$281	\$133	\$148
157	CTD001840974	121	\$36,220	\$4,032	\$10,823	\$2,181	\$1,817	\$2,498	\$21,351	\$121	\$21,230
158	IND000646943	118	\$8,867	\$987	\$5,167	\$2,120	\$1,767	\$2,429	\$12,470	\$155	\$12,315
159	ILD980613913	116	\$0	\$0	\$748	\$2,097	\$1,747	\$0	\$4,593	\$117	\$4,476
160	PAD067098822	116	\$15,480	\$1,723	\$20,838	\$2,097	\$1,747	\$2,402	\$28,808	\$117	\$28,691
161	IND000646943	116	\$8,867	\$987	\$5,167	\$2,085	\$1,738	\$2,389	\$12,366	\$152	\$12,214
162	MAD000604447	116	\$36,216	\$4,032	\$10,817	\$2,081	\$1,734	\$2,384	\$21,048	\$152	\$20,896
163	TXD077603371	115	\$0	\$0	\$739	\$2,061	\$1,718	\$0	\$4,517	\$115	\$4,403
164	NYD980592497	110	\$0	\$0	\$234			\$0	\$234	\$111	\$124
165	KYD000770313	109	\$16,211	\$1,805	\$710	\$1,957	\$1,631	\$2,242	\$8,344	\$109	\$8,235
166	NCD980842132	106	\$36,210	\$4,031	\$10,808	\$1,913	\$1,595	\$2,192	\$20,539	\$106	\$20,432
167	NYD980592497	105	\$0	\$0	\$224			\$0	\$224	\$105	\$118
168	NYD980592497	103	\$0	\$0	\$218			\$0	\$218	\$103	\$115
169	COD160887741	100	\$0	\$0	\$213			\$0	\$213	\$100	\$112
170	IND000646943	100	\$8,867	\$987	\$5,167	\$1,804	\$1,503	\$2,067	\$11,529	\$132	\$11,397
171	ILD000608471	100	\$36,206	\$4,031	\$10,801	\$1,791	\$1,493	\$2,052	\$20,167	\$100	\$20,068
172	MAD019371079	94	\$36,202	\$4,030	\$10,795	\$1,688	\$1,407	\$1,934	\$19,854	\$94	\$19,760
173	VAD982362428	93	\$14,992	\$1,669	\$630	\$1,678	\$1,398	\$1,922	\$7,298	\$93	\$7,204
174	ILD005083316	91	\$36,200	\$4,030	\$10,792	\$1,643	\$1,370	\$1,883	\$19,718	\$91	\$19,626
175	TXD056542749	87	\$15,476	\$1,723	\$20,808			\$1,797	\$24,328	\$87	\$24,241

176	MAD980912323	85	\$14,316	\$1,594	\$588	\$1,532	\$1,277	\$1,755	\$6,746	\$85	\$6,661
177	PAD002311884	82	\$36,194	\$4,029	\$10,783	\$1,481	\$1,234	\$1,697	\$19,224	\$82	\$19,141
178	NYD980592497	81	\$0	\$0	\$173			\$0	\$173	\$81	\$91
179	WID000808824	79	\$36,192	\$4,029	\$10,780	\$1,429	\$1,200	\$1,637	\$19,075	\$79	\$18,996
180	CTD055310759	79	\$15,475	\$1,723	\$20,799	\$1,416	\$1,200	\$1,623	\$26,761	\$79	\$26,682
181	MOD071987416	76	\$13,504	\$1,503	\$538	\$1,366	\$1,200	\$1,565	\$6,172	\$76	\$6,097
182	TXD058276130	76	\$0	\$0	\$537	\$1,363	\$1,200	\$0	\$3,100	\$76	\$3,024
183	GAD051010429	74	\$15,474	\$1,723	\$20,794	\$1,327	\$1,200	\$1,520	\$26,563	\$74	\$26,489
184	NYD980592497	73	\$0	\$0	\$154			\$0	\$154	\$73	\$82
185	IND000646943	69	\$8,867	\$987	\$5,167	\$1,234	\$1,200	\$1,414	\$10,002	\$90	\$9,912
186	IND000646943	67	\$8,867	\$987	\$5,167	\$1,212	\$1,200	\$1,389	\$9,955	\$88	\$9,867
187	NYD980592497	63	\$0	\$0	\$133			\$0	\$133	\$63	\$70
188	TXD052649027	60	\$0	\$0	\$451	\$1,087	\$1,200	\$0	\$2,739	\$60	\$2,678
189	CTD980668198	58	\$0	\$0	\$436	\$1,038	\$1,200	\$0	\$2,674	\$58	\$2,616
190	NJD002147023	56	\$36,176	\$4,027	\$10,756	\$1,008	\$1,200	\$1,155	\$18,146	\$56	\$18,090
191	CAD981375983	54	\$15,472	\$1,722	\$20,774			\$1,122	\$23,618	\$54	\$23,564
192	FLD982102295	52	\$0	\$0	\$111			\$0	\$111	\$52	\$58
193	CTD000604488	51	\$36,172	\$4,027	\$10,750	\$910	\$1,200	\$1,042	\$17,929	\$66	\$17,862
194	NYD003930849	50.0	\$0	\$0	\$106			\$0	\$106	\$50	\$56
195	ALD983176520	50.0	\$15,471	\$1,722	\$20,769			\$1,031	\$23,522	\$50	\$23,472
196	NYD980592497	49.2	\$0	\$0	\$104			\$0	\$104	\$49	\$55
197	IND000646943	49.1	\$8,867	\$987	\$5,167	\$884	\$1,200	\$1,013	\$9,251	\$65	\$9,186
198	OHD066060609	48.0	\$36,171	\$4,027	\$10,747	\$864	\$1,200	\$990	\$17,828	\$63	\$17,765
199	NYD980592497	46.9	\$0	\$0	\$99			\$0	\$99	\$47	\$53
200	MAD001402320	46.8	\$36,170	\$4,027	\$10,746	\$843	\$1,200	\$965	\$17,781	\$47	\$17,734
201	IND000646943	46.3	\$8,867	\$987	\$5,167	\$834	\$1,200	\$956	\$9,144	\$61	\$9,083
202	LAD000757286	45.3	\$0	\$0	\$361	\$815	\$1,200	\$0	\$2,376	\$45	\$2,331
203	ILD000608471	45.2	\$36,169	\$4,027	\$10,745	\$814	\$1,200	\$933	\$17,718	\$45	\$17,673
204	MID083684290	45.1	\$15,470	\$1,722	\$20,764	\$812	\$1,200	\$930	\$25,428	\$45	\$25,383
205	IND000646943	44.8	\$8,867	\$987	\$5,167	\$806	\$1,200	\$923	\$9,082	\$59	\$9,024
206	RID058065707	44.5	\$10,290	\$1,146	\$356	\$800	\$1,200	\$917	\$4,419	\$44	\$4,374

207	IND000646943	43.7	\$8,867	\$987	\$5,167	\$787	\$1,200	\$902	\$9,043	\$44	\$8,999
208	ILD000608471	42.4	\$36,167	\$4,026	\$10,742	\$763	\$1,200	\$874	\$17,606	\$42	\$17,563
209	NJD002147023	42.0	\$36,167	\$4,026	\$10,741	\$756	\$1,200	\$866	\$17,589	\$42	\$17,547
210	PAD980550412	41.7	\$9,960	\$1,109	\$339	\$751	\$1,200	\$860	\$4,259	\$42	\$4,217
211	OKD079986568	41.7	\$8,867	\$987	\$5,167	\$750	\$1,200	\$860	\$8,964	\$42	\$8,923
212	CTD001840974	41.0	\$36,166	\$4,026	\$10,740	\$739	\$1,200	\$846	\$17,552	\$41	\$17,510
213	CTD000604488	40.0	\$15,470	\$1,722	\$20,759	\$721	\$1,200	\$826	\$25,227	\$53	\$25,174
214	ILD000608471	40.0	\$36,165	\$4,026	\$10,739	\$720	\$1,200	\$825	\$17,510	\$40	\$17,470
215	NYD000707901	38.5	\$36,164	\$4,026	\$10,738	\$693	\$1,200	\$794	\$17,451	\$39	\$17,412
216	KSD007246846	37.0	\$15,469	\$1,722	\$20,756	\$666	\$1,200	\$763	\$25,107	\$49	\$25,058
217	OHD000816629	36.2	\$36,163	\$4,026	\$10,735	\$652	\$1,200	\$746	\$17,359	\$48	\$17,312
218	TXD056542749	34.9	\$15,469	\$1,722	\$20,753			\$719	\$23,194	\$35	\$23,159
219	TXD056542749	34.9	\$15,469	\$1,722	\$20,753			\$719	\$23,194	\$35	\$23,159
220	CTD001449784	34.6	\$36,162	\$4,026	\$10,734	\$623	\$1,200	\$714	\$17,296	\$35	\$17,262
221	TXD052649027	33.0	\$36,160	\$4,026	\$10,732	\$595	\$1,200	\$681	\$17,234	\$33	\$17,201
222	IND000646943	33.0	\$15,469	\$1,722	\$20,751	\$594	\$1,200	\$681	\$24,949	\$43	\$24,906
223	NYD003930849	32.0	\$0	\$0	\$68			\$0	\$68	\$32	\$36
224	MAR000007559	30.6	\$0	\$0	\$65			\$0	\$65	\$31	\$34
225	MAD053452637	27.1	\$36,156	\$4,025	\$10,726	\$488	\$1,200	\$559	\$16,998	\$36	\$16,962
226	NYD980592497	26.8	\$0	\$0	\$57			\$0	\$57	\$27	\$30
227	NYD002067932	25.7	\$36,155	\$4,025	\$10,724	\$463	\$1,200	\$530	\$16,942	\$26	\$16,916
228	OHD980681571	25.6	\$36,155	\$4,025	\$10,724	\$460	\$1,200	\$527	\$16,937	\$26	\$16,911
229	KSD007246846	25.5	\$36,155	\$4,025	\$10,724	\$459	\$1,200	\$526	\$16,934	\$33	\$16,900
230	VAD980831176	24.0	\$8,867	\$987	\$5,167			\$494	\$6,648	\$24	\$6,624
231	IND000646943	23.1	\$8,867	\$987	\$5,167	\$415	\$1,200	\$476	\$8,245	\$23	\$8,222
232	ILD000608471	22.4	\$36,153	\$4,025	\$10,721	\$403	\$1,200	\$462	\$16,811	\$22	\$16,789
233	ILD000608471	22.4	\$36,153	\$4,025	\$10,721	\$403	\$1,200	\$462	\$16,811	\$22	\$16,789
234	ILD000608471	22.0	\$36,153	\$4,025	\$10,721	\$396	\$1,200	\$454	\$16,795	\$22	\$16,773
235	MID083684290	21.9	\$15,467	\$1,722	\$20,740	\$394	\$1,200	\$451	\$24,507	\$22	\$24,485
236	KSD980854285	21.8	\$8,867	\$987	\$5,167	\$392	\$1,200	\$448	\$8,194	\$22	\$8,172
237	IND000646943	21.5	\$8,867	\$987	\$5,167	\$386	\$1,200	\$443	\$8,183	\$28	\$8,155

238	MOD071987416	21.0	\$15,467	\$1,722	\$20,739	\$378	\$1,200	\$433	\$24,471	\$21	\$24,450
239	NYD980592497	20.9	\$0	\$0	\$44			\$0	\$44	\$21	\$23
240	NJD002385730	20.9	\$36,152	\$4,025	\$10,719			\$430	\$15,174	\$21	\$15,153
241	ILD000608471	20.8	\$36,152	\$4,025	\$10,719	\$374	\$1,200	\$429	\$16,747	\$21	\$16,727
242	ILD000608471	20.8	\$36,152	\$4,025	\$10,719	\$374	\$1,200	\$429	\$16,747	\$21	\$16,727
243	FL6170024412	20.5	\$0	\$0	\$196	\$369	\$1,200	\$0	\$1,766	\$21	\$1,745
244	MAR000007955	20.5	\$47,833	\$5,325	\$12,060	\$369	\$1,200	\$423	\$19,377	\$21	\$19,356
245	MAD000604447	20.4	\$36,152	\$4,025	\$10,719	\$367	\$1,200	\$421	\$16,732	\$27	\$16,705
246	ILD000608471	20.4	\$36,152	\$4,025	\$10,719	\$367	\$1,200	\$421	\$16,732	\$20	\$16,711
247	MAD019371079	20.2	\$36,152	\$4,025	\$10,719	\$364	\$1,200	\$417	\$16,724	\$20	\$16,704
248	ILD000608471	20.0	\$36,152	\$4,025	\$10,719	\$360	\$1,200	\$412	\$16,716	\$20	\$16,696
249	IND000646943	20.0	\$15,467	\$1,722	\$20,738	\$360	\$1,200	\$412	\$24,432	\$20	\$24,412
250	CTD980668198	19.9	\$15,467	\$1,722	\$20,738	\$358	\$1,200	\$410	\$24,428	\$20	\$24,408
251	ILD000608471	19.2	\$36,151	\$4,025	\$10,718	\$346	\$1,200	\$396	\$16,684	\$19	\$16,665
252	ILD000608471	19.2	\$36,151	\$4,025	\$10,718	\$346	\$1,200	\$396	\$16,684	\$19	\$16,665
253	VAR000004978	19.1	\$8,867	\$987	\$5,167	\$345	\$1,200	\$395	\$8,093	\$19	\$8,074
254	ILD000608471	18.8	\$36,151	\$4,025	\$10,717	\$338	\$1,200	\$388	\$16,668	\$19	\$16,649
255	ILD000608471	18.8	\$36,151	\$4,025	\$10,717	\$338	\$1,200	\$388	\$16,668	\$19	\$16,649
256	OKD987083946	18.8	\$0	\$0	\$183	\$338	\$1,200	\$0	\$1,721	\$19	\$1,703
257	CA7170090016	18.7	\$0	\$0	\$40			\$0	\$40	\$25	\$15
258	TXD056542749	17.4	\$15,467	\$1,722	\$20,735			\$359	\$22,816	\$17	\$22,799
259	IND000646943	17.2	\$15,467	\$1,722	\$20,735	\$310	\$1,200	\$355	\$24,321	\$23	\$24,298
260	DED053304770	17.1	\$0	\$0	\$36			\$0	\$36	\$17	\$19
261	FLD980729610	17.1	\$6,328	\$705	\$171	\$308	\$1,200	\$352	\$2,735	\$22	\$2,713
262	NJD006980924	17.0	\$8,867	\$987	\$5,167			\$350	\$6,504	\$17	\$6,487
263	UTD001705029	16.5	\$0	\$0	\$35			\$0	\$35	\$17	\$19
264	IND000646943	15.8	\$15,466	\$1,722	\$20,733	\$284	\$1,200	\$326	\$24,265	\$16	\$24,250
265	PAD004498432	15.6	\$6,049	\$673	\$159	\$281	\$1,200	\$322	\$2,637	\$16	\$2,621
266	IND085616837	14.9	\$36,148	\$4,024	\$10,713	\$268	\$1,200	\$307	\$16,512	\$15	\$16,497
267	ILD000608471	14.8	\$36,148	\$4,024	\$10,713	\$266	\$1,200	\$305	\$16,509	\$15	\$16,494
268	GAR000012336	14.8	\$8,867	\$987	\$5,167	\$266	\$1,200	\$305	\$7,926	\$15	\$7,911

269	NCD986177061	14.4	\$36,148	\$4,024	\$10,713	\$260	\$1,200	\$298	\$16,494	\$14	\$16,480
270	IND000646943	14.3	\$8,867	\$987	\$5,167	\$257	\$1,200	\$295	\$7,906	\$19	\$7,887
271	IND000646943	14.1	\$8,867	\$987	\$5,167	\$254	\$1,200	\$291	\$7,899	\$14	\$7,885
272	ILD000608471	13.6	\$36,147	\$4,024	\$10,712	\$245	\$1,200	\$280	\$16,461	\$14	\$16,448
273	TXD052649027	13.4	\$15,466	\$1,722	\$20,731	\$241	\$1,200	\$276	\$24,169	\$13	\$24,156
274	IND000646943	13.3	\$8,867	\$987	\$5,167	\$239	\$1,200	\$274	\$7,867	\$13	\$7,854
275	IND000646943	13.0	\$8,867	\$987	\$5,167	\$233	\$1,200	\$267	\$7,855	\$17	\$7,838
276	TXD052649027	12.6	\$36,147	\$4,024	\$10,711	\$227	\$1,200	\$260	\$16,422	\$13	\$16,409
277	IND000646943	12.2	\$8,867	\$987	\$5,167	\$219	\$1,200	\$251	\$7,825	\$16	\$7,809
278	CAD982437089	12.1	\$15,466	\$1,722	\$20,730	\$218	\$1,200	\$249	\$24,118	\$12	\$24,106
279	CTD000845198	11.9	\$15,466	\$1,722	\$20,729	\$214	\$1,200	\$245	\$24,111	\$12	\$24,099
280	NYD980592497	11.7	\$0	\$0	\$25			\$0	\$25	\$12	\$13
281	NYD000809350	11.1	\$47,833	\$5,325	\$12,060	\$200	\$1,200	\$229	\$19,014	\$11	\$19,003
282	LAD000757286	10.7	\$0	\$0	\$23			\$0	\$23	\$11	\$12
283	NJD002385730	10.4	\$36,145	\$4,024	\$10,709			\$215	\$14,948	\$10	\$14,937
284	TXD062128004	10.3	\$0	\$0	\$116	\$186	\$1,200	\$0	\$1,502	\$10	\$1,491
285	OHD000816629	10.3	\$36,145	\$4,024	\$10,709	\$185	\$1,200	\$211	\$16,328	\$13	\$16,315
286	NYD980592497	10.0	\$0	\$0	\$21			\$0	\$21	\$10	\$11
287	TND982109142	9.22	\$0	\$0	\$106			\$0	\$106	\$9	\$97
288	CTD000604488	9.06	\$36,144	\$4,024	\$10,707	\$163	\$1,200	\$187	\$16,281	\$12	\$16,269
289	CTD000844332	9.02	\$36,144	\$4,024	\$10,707	\$162	\$1,200	\$186	\$16,279	\$9	\$16,270
290	TXD077603371	8.51	\$4,024	\$448	\$10,707	\$153	\$1,200	\$175	\$12,683	\$9	\$12,675
291	CTD001139617	8.04	\$36,143	\$4,024	\$10,706	\$145	\$1,200	\$166	\$16,240	\$8	\$16,232
292	NYD002211324	7.82	\$36,143	\$4,024	\$10,706	\$141	\$1,200	\$161	\$16,232	\$8	\$16,224
293	CAD000627273	7.76	\$140,202	\$15,608	\$43	\$140	\$1,200	\$160	\$17,151	\$8	\$17,143
294	FLD980729610	7.72	\$4,225	\$470	\$93	\$139	\$1,200	\$159	\$2,061	\$10	\$2,051
295	NYD980592497	7.61	\$0	\$0	\$16			\$0	\$16	\$8	\$9
296	PAD001887579	6.74	\$36,143	\$4,024	\$10,705	\$121	\$1,200	\$139	\$16,189	\$7	\$16,182
297	CAD049904766	6.66	\$36,143	\$4,024	\$10,705	\$120	\$1,200	\$137	\$16,186	\$7	\$16,179
298	NYD980592497	6.31	\$0	\$0	\$13			\$0	\$13	\$6	\$7
299	KSD007246846	5.88	\$15,465	\$1,722	\$20,723	\$106	\$1,200	\$121	\$23,872	\$8	\$23,864

300	NYD980592497	5.66	\$0	\$0	\$12			\$0	\$12	\$6	\$6
301	MED985467935	5.65	\$36,142	\$4,024	\$10,704	\$102	\$1,200	\$117	\$16,146	\$7	\$16,138
302	NYD002211324	5.25	\$36,142	\$4,024	\$10,703	\$95	\$1,200	\$108	\$16,130	\$7	\$16,123
303	MSD054179403	5.20	\$3,457	\$385	\$68			\$107	\$560	\$5	\$555
304	NYD000098558	5.14	\$36,141	\$4,024	\$10,703	\$93	\$1,200	\$106	\$16,125	\$5	\$16,120
305	PAD067098822	5.05	\$36,141	\$4,023	\$10,703	\$91	\$1,200	\$104	\$16,122	\$5	\$16,117
306	WID068318146	4.80	\$36,141	\$4,023	\$10,703	\$86	\$1,200	\$99	\$16,112	\$5	\$16,107
307	UTD001705029	4.73	\$0	\$0	\$10			\$0	\$10	\$5	\$5
308	OHD066060609	4.64	\$36,141	\$4,023	\$10,703	\$84	\$1,200	\$96	\$16,105	\$6	\$16,099
309	ILD000608471	4.40	\$36,141	\$4,023	\$10,703	\$79	\$1,200	\$91	\$16,096	\$6	\$16,090
310	IND000646943	4.26	\$15,465	\$1,722	\$20,721	\$77	\$1,200	\$88	\$23,808	\$6	\$23,802
311	NYD980592497	4.24	\$0	\$0	\$9			\$0	\$9	\$6	\$3
312	OHD052324290	4.16	\$0	\$0	\$57	\$75	\$1,200	\$0	\$1,332	\$4	\$1,328
313	OHD980681571	4.15	\$36,141	\$4,023	\$10,702	\$75	\$1,200	\$86	\$16,086	\$4	\$16,082
314	OHD066060609	4.11	\$36,141	\$4,023	\$10,702	\$74	\$1,200	\$85	\$16,084	\$5	\$16,079
315	MID000820381	3.82	\$0	\$0	\$54			\$0	\$54	\$4	\$50
316	NYD003930849	3.36	\$0	\$0	\$7			\$0	\$7	\$3	\$4
317	NYD980592497	3.21	\$0	\$0	\$7			\$0	\$7	\$3	\$4
318	ILD000608471	3.00	\$36,140	\$4,023	\$10,701	\$54	\$1,200	\$62	\$16,040	\$3	\$16,037
319	ILD000608471	2.88	\$36,140	\$4,023	\$10,701	\$52	\$1,200	\$59	\$16,036	\$3	\$16,033
320	NYD080480734	2.86	\$36,140	\$4,023	\$10,701	\$51	\$1,200	\$59	\$16,035	\$3	\$16,032
321	ILD000608471	2.76	\$36,140	\$4,023	\$10,701	\$50	\$1,200	\$57	\$16,031	\$3	\$16,028
322	IND000646943	2.65	\$8,867	\$987	\$5,167	\$48	\$1,200	\$55	\$7,456	\$3	\$7,453
323	CT5000001107	2.52	\$15,465	\$1,722	\$20,720	\$45	\$1,200	\$52	\$23,739	\$3	\$23,736
324	FLD981474802	2.40	\$2,333	\$260	\$38	\$43	\$1,200	\$49	\$1,590	\$3	\$1,587
325	CTD001139617	2.28	\$36,140	\$4,023	\$10,700	\$41	\$1,200	\$47	\$16,012	\$2	\$16,010
326	NYD980592497	2.09	\$0	\$0	\$4			\$0	\$4	\$2	\$2
327	OHD005046677	1.96	\$36,139	\$4,023	\$10,700	\$35	\$1,200	\$41	\$15,999	\$2	\$15,997
328	NY0000926436	1.88	\$0	\$0	\$4			\$0	\$4	\$2	\$2
329	ORD099149445	1.88	\$8,867	\$987	\$5,167	\$34	\$1,200	\$39	\$7,427	\$2	\$7,425
330	OHD980681571	1.83	\$8,867	\$987	\$5,167	\$33	\$1,200	\$38	\$7,425	\$2	\$7,423

331	FLD981474802	1.73	\$36,139	\$4,023	\$10,700	\$31	\$1,200	\$36	\$15,990	\$2	\$15,988
332	OHD980681571	1.60	\$36,139	\$4,023	\$10,700	\$29	\$1,200	\$33	\$15,985	\$2	\$15,983
333	OHD980681571	1.60	\$36,139	\$4,023	\$10,700	\$29	\$1,200	\$33	\$15,985	\$2	\$15,983
334	ILD000608471	1.54	\$36,139	\$4,023	\$10,700	\$28	\$1,200	\$32	\$15,982	\$2	\$15,981
335	NYD002211324	1.53	\$36,139	\$4,023	\$10,700	\$27	\$1,200	\$31	\$15,982	\$2	\$15,980
336	NYD980592497	1.31	\$0	\$0	\$3			\$0	\$3	\$1	\$1
337	NYD980592497	1.29	\$0	\$0	\$3			\$0	\$3	\$1	\$1
338	OHD980681571	1.19	\$8,867	\$987	\$5,167	\$21	\$1,200	\$24	\$7,400	\$1	\$7,399
339	CT5000001107	1.15	\$15,465	\$1,722	\$20,718	\$21	\$1,200	\$24	\$23,684	\$1	\$23,683
340	ILD000608471	1.10	\$36,139	\$4,023	\$10,699	\$20	\$1,200	\$23	\$15,965	\$1	\$15,964
341	MD6150004095	1.05	\$0	\$0	\$2			\$0	\$2	\$1	\$1
342	NYD980592497	0.92	\$0	\$0	\$2			\$0	\$2	\$1	\$1
343	WAD988478723	0.92	\$4,023	\$448	\$10,699	\$17	\$1,200	\$19	\$12,382	\$1	\$12,381
344	NHD500015441	0.90	\$15,608	\$1,738	\$4.97	\$16	\$1,200	\$19	\$2,977	\$1	\$2,976
345	MD6150004095	0.88	\$0	\$0	\$2			\$0	\$2	\$1	\$1
346	OHD980681571	0.88	\$36,139	\$4,023	\$10,699	\$16	\$1,200	\$18	\$15,956	\$1	\$15,955
347	TXD050858182	0.83	\$15,464	\$1,722	\$20,718	\$15	\$1,200	\$17	\$23,672	\$1	\$23,671
348	NYD053719894	0.83	\$36,139	\$4,023	\$10,699	\$15	\$1,200	\$17	\$15,954	\$1	\$15,953
349	ILD005158274	0.77	\$36,139	\$4,023	\$10,699	\$14	\$1,200	\$16	\$15,952	\$1	\$15,951
350	NYD980592497	0.68	\$0	\$0	\$1			\$0	\$1	\$1	\$1
351	NYD980592497	0.66	\$0	\$0	\$1			\$0	\$1	\$1	\$1
352	ILD000608471	0.66	\$36,138	\$4,023	\$10,699	\$12	\$1,200	\$14	\$15,947	\$1	\$15,947
353	NYD080480734	0.60	\$36,138	\$4,023	\$10,699	\$11	\$1,200	\$12	\$15,945	\$1	\$15,944
354	OHD980681571	0.50	\$36,138	\$4,023	\$10,699	\$9	\$1,200	\$10	\$15,941	\$1	\$15,940
355	NYD002211324	0.49	\$36,138	\$4,023	\$10,699	\$9	\$1,200	\$10	\$15,941	\$0	\$15,940
356	WAD009249863	0.48	\$8,867	\$987	\$5,167	\$9	\$1,200	\$10	\$7,373	\$0	\$7,372
357	CTD001186212	0.46	\$36,138	\$4,023	\$10,698	\$8	\$1,200	\$9	\$15,939	\$0	\$15,939
358	ALD000622464	0.46	\$36,138	\$4,023	\$10,698	\$8	\$1,200	\$9	\$15,939	\$1	\$15,939
359	OHD980681571	0.45	\$36,138	\$4,023	\$10,698	\$8	\$1,200	\$9	\$15,939	\$0	\$15,939
360	ILD000608471	0.44	\$36,138	\$4,023	\$10,698	\$8	\$1,200	\$9	\$15,939	\$0	\$15,938
361	NYD980592497	0.42	\$0	\$0	\$1			\$0	\$1	\$0	\$0

362	AKD009252230	0.41	\$8,867	\$987	\$5,167	\$7	\$1,200	\$8	\$7,370	\$0	\$7,369
363	ORD009227398	0.31	\$8,867	\$987	\$5,167	\$6	\$1,200	\$6	\$7,366	\$0	\$7,366
364	GAD980845077	0.30	\$36,138	\$4,023	\$10,698	\$5	\$1,200	\$6	\$15,933	\$0	\$15,933
365	PAD003038056	0.30	\$15,464	\$1,722	\$20,717	\$5	\$1,200	\$6	\$23,650	\$0	\$23,650
366	NYD980592497	0.29	\$0	\$0	\$1			\$0	\$1	\$0	\$0
367	CTD001149277	0.23	\$36,138	\$4,023	\$10,698	\$4	\$1,200	\$5	\$15,930	\$0	\$15,930
368	GAD981224991	0.23	\$15,608	\$1,738	\$1,24	\$4	\$1,200	\$5	\$2,948	\$0	\$2,947
369	PAD987271848	0.23	\$36,138	\$4,023	\$10,698	\$4	\$1,200	\$5	\$15,930	\$0	\$15,930
370	ILD000608471	0.22	\$36,138	\$4,023	\$10,698	\$4	\$1,200	\$5	\$15,930	\$0	\$15,930
371	CT5000001107	0.21	\$15,464	\$1,722	\$20,717	\$4	\$1,200	\$4	\$23,647	\$0	\$23,647
372	TXD050858182	0.20	\$15,464	\$1,722	\$20,717	\$4	\$1,200	\$4	\$23,647	\$0	\$23,646
373	MID980683775	0.20	\$15,464	\$1,722	\$20,717	\$4	\$1,200	\$4	\$23,646	\$0	\$23,646
374	WA0000189431	0.19	\$8,867	\$987	\$5,167	\$4	\$1,200	\$4	\$7,362	\$0	\$7,361
375	NYD002211324	0.18	\$36,138	\$4,023	\$10,698	\$3	\$1,200	\$4	\$15,928	\$0	\$15,928
376	NYD980592497	0.17	\$0	\$0	\$0			\$0	\$0	\$0	\$0
377	CTD001169010	0.10	\$15,464	\$1,722	\$20,717	\$2	\$1,200	\$2	\$23,643	\$0	\$23,642
378	NYD980592497	0.10	\$0	\$0	\$0			\$0	\$0	\$0	\$0
379	NYD980592497	0.08	\$0	\$0	\$0			\$0	\$0	\$0	\$0
380	NYD980592497	0.06	\$0	\$0	\$0			\$0	\$0	\$0	\$0
381	ILD000608471	0.04	\$36,138	\$4,023	\$10,698	\$1	\$1,200	\$1	\$15,923	\$0	\$15,923
382	NYD980592497	0.02	\$0	\$0	\$0			\$0	\$0	\$0	\$0
383	NYD980592497	0.01	\$0	\$0	\$0			\$0	\$0	\$0	\$0
Columnt Totals=		51,496,157	\$18,508,063	\$2,060,438	\$28,071,443	\$523,524	\$578,346	\$915,219,192	\$946,452,943	\$11,850,116	\$934,602,827
Subtotals w/o item 1 =		8,783,662	\$7,185,300	\$799,914	\$13,627,191	\$523,524	\$578,346	\$34,461,169	\$49,990,145	\$6,506,783	\$43,483,362
Average per facility =		294,264	\$105,760	\$11,774	\$160,408	\$2,992	\$3,305	\$5,229,824	\$5,408,303	\$67,715	\$5,340,588
Average per wastestream =		134,455	\$48,324	\$5,380	\$73,294	\$2,424	\$2,678	\$2,389,606	\$2,471,157	\$30,940	\$2,440,216
Median per wastestream =		52	\$10,290	\$1,146	\$10,701	\$382	\$1,200	\$59	\$16,086	\$60	\$16,079

**Explanatory Notes:**

(a)

\* Key unit cost factors:

! Waste trucking unit cost:

**\$18/ton** represents the average incremental cost for trucking RCRA hazardous wastes, compared to the average cost of trucking non-hazardous materials, based on OSW triangulation of three data sources on trucking costs, based on average trucking one-way distance of 200 miles, which approximately represents the national average distance between RCRA hazardous waste generators, and RCRA-permitted hazardous waste treatment, storage, disposal, & recycling facilities (TSDRFs); see attached spreadsheet for data source and derivation of this unit cost factor.

! RCRA manifest unit cost:

**\$300/trip** represents average manifest paperwork cost per truck shipment over the entire chain-of-custody from waste generators to waste transporters

to waste receivers to filing the manifest with state governments for recordkeeping (see attached spreadsheet for source and derivation of manifest unit cost).

! Sludge management unit cost:

**\$252/ton** represents an average unit cost based on a data sample of sludge management quantities and methods from the USEPA-OSW 1996 "National Hazardous Waste Constituent Survey" database, consisting of 27 sludge wastestreams (387,000 tons) managed by: (1) dewatering, (2) phase separation (filtration), (3) stabilization/chemical fixation, (4) incineration, (5) energy recovery, and (6) landfill (see attached spreadsheet for the sludge data sample).

(b) \*\* Wastewater system costs (capital & O&M) estimated using cost algorithms displayed in another spreadsheet attached to this report.

(c) \*\*\* For facilities which generate less than four 20-ton full truckload equivalents of scrubber waters per year for offsite transport, minimum of four manifests per year assigned (40 CFR 262.34 for LQGs).

Cost Savings Estimate #1: If “Headworks Exemption” Revised to Include All Four Additional F002 & F005 Spent Solvents (year 2000\$): Benzene & 2-Ethoxyethanol & 1,1,2-Trichloroethane & 2-Nitropropane												
			A	B	C	D	E	F	G	H	I	J
Discount rate for annualizing capital costs>				3%		\$18/ton	\$300/trip	\$252/ton	< Key unit cost factors*			
Waste stream item	EPA_ID	1997 aqueous F002 or F005 spent solvent managed (tons/year)	RCRA hazardous waste water manage-ment system capital cost**	RCRA hazardous waste water management system capital cost** (annualized over 10 years)	RCRA hazardous waste water management system annual O&M cost**	Annual trucking costs for offsite manage-ment***	Annual RCRA manifest cost for offsite shipping	NOTE: The costs in these columns are HYPOTHETICAL premised on all imputed wastewater sludge quantities: (1) hypothetically generated by wastewater treatment units, and (2) managed as RCRA hazardous wastes				
								Hypothetical sludge management cost if RCRA haz waste (\$ per year)	Hypothetical cnsite + offsite total annual waste management cost (B+...+F)	Hypothetical annual cost for management as non-haz waste (in surface impound-ments)	Hypothetical potential annnual cost savings (G - H)	Annual spent solvent waste water sludge quantity affected (tons/year)
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15	IND006050967	150,182	\$0	\$0	\$318,490			\$0	\$318,490	\$197,271	\$121,218	0
16												
17												
18												

19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30	COD076470525	31,097	\$57,251	\$6,374	\$41,794			\$641,240	\$689,408	\$40,848	\$648,560	2,545
31												
32												
33												
34												
35												
36												
37												
38	NYD980592497	16,824	\$0	\$0	\$35,678			\$0	\$35,678	\$16,837	\$18,841	0
39												
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65												
66												
67												
68												
69												
70	NED981723513	2,060	\$37,537	\$4,179	\$12,817	\$37,080	\$30,900	\$42,478	\$127,454	\$2,706	\$124,748	169
71												
72												
73	OHD093945293	1,699	\$0	\$0	\$5,897	\$30,589	\$25,491	\$0	\$61,976	\$2,232	\$59,744	0
74												
75												
76												
77	CA7170090016	1,576	\$0	\$0	\$3,342			\$0	\$3,342	\$2,070	\$1,272	0
78												
79												
80												

81	NYD980592497	1,419	\$0	\$0	\$3,010			\$0	\$3,010	\$1,864	\$1,146	0
82												
83												
84												
85												
86												
87	COD000694869	1,001	\$15,596	\$1,736	\$21,759	\$18,011	\$15,010	\$20,634	\$77,150	\$1,314	\$75,836	82
88												
89												
90												
91												
92												
93												
94												
95												
96												
97												
98	OHD001926740	590	\$36,539	\$4,068	\$11,306	\$10,619	\$8,849	\$12,165	\$47,006	\$590	\$46,415	48
99												
100												
101												
102												
103												
104												
105												
106	IND000646943	495	\$8,867	\$987	\$5,167	\$8,910	\$7,425	\$10,208	\$32,697	\$650	\$32,047	41
107												
108												
109												
110												
111												

112												
113												
114												
115												
116												
117												
118												
119												
120												
121	OHD066060609	341	\$36,369	\$4,049	\$11,049	\$6,136	\$5,114	\$7,030	\$33,378	\$448	\$32,930	28
122												
123												
124												
125												
126												
127												
128												
129												
130												
131												
132												
133												
134	OKD089761290	251	\$0	\$0	\$1,352	\$4,518	\$3,765	\$0	\$9,634	\$330	\$9,305	0
135												
136	IND000646943	242	\$15,496	\$1,725	\$20,969	\$4,363	\$3,636	\$4,998	\$35,692	\$318	\$35,373	20
137												
138												
139												
140												
141												
142												

143												
144												
145												
146	OHD004172565	183	\$36,262	\$4,037	\$10,886	\$3,289	\$2,741	\$3,767	\$24,720	\$240	\$24,480	15
147												
148												
149												
150												
151												
152												
153	IND000646943	142	\$8,867	\$987	\$5,167	\$2,550	\$2,125	\$2,921	\$13,749	\$186	\$13,563	12
154												
155												
156												
157												
158	IND000646943	118	\$8,867	\$987	\$5,167	\$2,120	\$1,767	\$2,429	\$12,470	\$155	\$12,315	10
159												
160												
161	IND000646943	116	\$8,867	\$987	\$5,167	\$2,085	\$1,738	\$2,389	\$12,366	\$152	\$12,214	9
162	MAD000604447	116	\$36,216	\$4,032	\$10,817	\$2,081	\$1,734	\$2,384	\$21,048	\$152	\$20,896	9
163												
164												
165												
166												
167												
168												
169												
170	IND000646943	100	\$8,867	\$987	\$5,167	\$1,804	\$1,503	\$2,067	\$11,529	\$132	\$11,397	8
171												
172												
173												

174												
175												
176												
177												
178												
179												
180												
181												
182												
183												
184												
185	IND000646943	69	\$8,867	\$987	\$5,167	\$1,234	\$1,200	\$1,414	\$10,002	\$90	\$9,912	6
186	IND000646943	67	\$8,867	\$987	\$5,167	\$1,212	\$1,200	\$1,389	\$9,955	\$88	\$9,867	6
187												
188												
189												
190												
191												
192												
193	CTD000604488	51	\$36,172	\$4,027	\$10,750	\$910	\$1,200	\$1,042	\$17,929	\$66	\$17,862	4
194												
195												
196												
197	IND000646943	49	\$8,867	\$987	\$5,167	\$884	\$1,200	\$1,013	\$9,251	\$65	\$9,186	4
198	OHD066060609	48	\$36,171	\$4,027	\$10,747	\$864	\$1,200	\$990	\$17,828	\$63	\$17,765	4
199												
200												
201	IND000646943	46	\$8,867	\$987	\$5,167	\$834	\$1,200	\$956	\$9,144	\$61	\$9,083	4
202												
203												
204												

205	IND000646943	45	\$8,867	\$987	\$5,167	\$806	\$1,200	\$923	\$9,082	\$59	\$9,024	4
206												
207												
208												
209												
210												
211												
212												
213	CTD000604488	40	\$15,470	\$1,722	\$20,759	\$721	\$1,200	\$826	\$25,227	\$53	\$25,174	3
214												
215												
216	KSD007246846	37	\$15,469	\$1,722	\$20,756	\$666	\$1,200	\$763	\$25,107	\$49	\$25,058	3
217	OHD000816629	36	\$36,163	\$4,026	\$10,735	\$652	\$1,200	\$746	\$17,359	\$48	\$17,312	3
218												
219												
220												
221												
222	IND000646943	33	\$15,469	\$1,722	\$20,751	\$594	\$1,200	\$681	\$24,949	\$43	\$24,906	3
223												
224												
225	MAD053452637	27	\$36,156	\$4,025	\$10,726	\$488	\$1,200	\$559	\$16,998	\$36	\$16,962	2
226												
227												
228												
229	KSD007246846	25	\$36,155	\$4,025	\$10,724	\$459	\$1,200	\$526	\$16,934	\$33	\$16,900	2
230												
231												
232												
233												
234												
235												

236												
237	IND000646943	21	\$8,867	\$987	\$5,167	\$386	\$1,200	\$443	\$8,183	\$28	\$8,155	2
238												
239												
240												
241												
242												
243												
244												
245	MAD000604447	20	\$36,152	\$4,025	\$10,719	\$367	\$1,200	\$421	\$16,732	\$27	\$16,705	2
246												
247												
248												
249												
250												
251												
252												
253												
254												
255												
256												
257	CA7170090016	19	\$0	\$0	\$40			\$0	\$40	\$25	\$15	0
258												
259	IND000646943	17	\$15,467	\$1,722	\$20,735	\$310	\$1,200	\$355	\$24,321	\$23	\$24,298	1
260												
261	FLD980729610	17	\$6,328	\$705	\$171	\$308	\$1,200	\$352	\$2,735	\$22	\$2,713	1
262												
263												
264												
265												
266												

267												
268												
269												
270	IND000646943	14	\$8,867	\$987	\$5,167	\$257	\$1,200	\$295	\$7,906	\$19	\$7,887	1
271												
272												
273												
274												
275	IND000646943	13	\$8,867	\$987	\$5,167	\$233	\$1,200	\$267	\$7,855	\$17	\$7,838	1
276												
277	IND000646943	12	\$8,867	\$987	\$5,167	\$219	\$1,200	\$251	\$7,825	\$16	\$7,809	1
278												
279												
280												
281												
282												
283												
284												
285	OHD000816629	10	\$36,145	\$4,024	\$10,709	\$185	\$1,200	\$211	\$16,328	\$13	\$16,315	0.8
286												
287												
288	CTD000604488	9	\$36,144	\$4,024	\$10,707	\$163	\$1,200	\$187	\$16,281	\$12	\$16,269	0.7
289												
290												
291												
292												
293												
294	FLD980729610	8	\$4,225	\$470	\$93	\$139	\$1,200	\$159	\$2,061	\$10	\$2,051	0.6
295												
296												
297												

298												
299	KSD007246846	6	\$15,465	\$1,722	\$20,723	\$106	\$1,200	\$121	\$23,872	\$8	\$23,864	0.5
300												
301	MED985467935	6	\$36,142	\$4,024	\$10,704	\$102	\$1,200	\$117	\$16,146	\$7	\$16,138	0.5
302	NYD002211324	5	\$36,142	\$4,024	\$10,703	\$95	\$1,200	\$108	\$16,130	\$7	\$16,123	0.4
303												
304												
305												
306												
307												
308	OHD066060609	5	\$36,141	\$4,023	\$10,703	\$84	\$1,200	\$96	\$16,105	\$6	\$16,099	0.4
309	ILD000608471	4	\$36,141	\$4,023	\$10,703	\$79	\$1,200	\$91	\$16,096	\$6	\$16,090	0.4
310	IND000646943	4	\$15,465	\$1,722	\$20,721	\$77	\$1,200	\$88	\$23,808	\$6	\$23,802	0.3
311	NYD980592497	4	\$0	\$0	\$9			\$0	\$9	\$6	\$3	0.0
312												
313												
314	OHD066060609	4	\$36,141	\$4,023	\$10,702	\$74	\$1,200	\$85	\$16,084	\$5	\$16,079	0.3
315												
316												
317												
318												
319												
320												
321												
322	IND000646943	3	\$8,867	\$987	\$5,167	\$48	\$1,200	\$55	\$7,456	\$3	\$7,453	0.2
323												
324	FLD981474802	2	\$2,333	\$260	\$38	\$43	\$1,200	\$49	\$1,590	\$3	\$1,587	0.2
325												
326												
327												
328												

329												
330												
331	FLD981474802	2	\$36,139	\$4,023	\$10,700	\$31	\$1,200	\$36	\$15,990	\$2	\$15,988	0.14
332												
333												
334												
335												
336												
337												
338												
339												
340												
341												
342												
343												
344												
345	MD6150004095	1	\$0	\$0	\$2			\$0	\$2	\$1	\$1	0.00
346												
347												
348												
349												
350												
351												
352												
353												
354												
355												
356												
357												
358	ALD000622464	0	\$36,138	\$4,023	\$10,698	\$8	\$1,200	\$9	\$15,939	\$1	\$15,939	0.04
359												

360												
361												
362												
363												
364												
365												
366	NYD980592497	0	\$0	\$0	\$1			\$0	\$1	\$0	\$0	0.00
367												
368												
369												
370	ILD000608471	0	\$36,138	\$4,023	\$10,698	\$4	\$1,200	\$5	\$15,930	\$0	\$15,930	0.02
371												
372												
373	MID980683775	0	\$15,464	\$1,722	\$20,717	\$4	\$1,200	\$4	\$23,646	\$0	\$23,646	0.02
374												
375												
376												
377												
378												
379												
380												
381												
382												
383												
Columnt Totals=		209,333	\$1,103,807	\$122,883	\$903,614	\$147,799	\$154,996	\$770,339	\$2,099,632	\$269,523	\$1,830,109	3,057
				Number annual manifests =				411		Facility count =		25
Wastestream count =											59	
Average per facility =		8,373	\$44,152	\$4,915	\$36,145	\$5,912	\$6,200	\$30,814	\$83,985	\$10,781	\$73,204	122
Average per wastestream =		3,548	\$18,709	\$2,083	\$15,315	\$2,505	\$2,627	\$13,057	\$35,587	\$4,568	\$31,019	52
Median per wastestream =		33	\$15,465	\$1,722	\$10,702	\$541	\$1,200	\$352	\$16,105	\$43	\$16,099	1

**Explanatory Notes:**

(a) \* Key unit cost factors:

	! Waste trucking unit cost:	<b>\$18/ton</b> represents the average incremental cost for trucking RCRA hazardous wastes, compared to the average cost of trucking non-hazardous materials, based on OSW triangulation of three data sources on trucking costs, based on average trucking one-way distance of 200 miles, which approximately represents the national average distance between RCRA hazardous waste generators, and RCRA-permitted hazardous waste treatment, storage, disposal, & recycling facilities (TSDRFs); see attached spreadsheet for data source and derivation of this unit cost factor.
	! RCRA manifest unit cost:	<b>\$300/trip</b> represents average manifest paperwork cost per truck shipment over the entire chain-of-custody from waste generators to waste transporters to waste receivers to filing the manifest with state governments for recordkeeping (see attached spreadsheet for source and derivation of manifest unit cost).
	! Sludge management unit cost:	<b>\$252/ton</b> represents an average unit cost based on a data sample of sludge management quantities and methods from the USEPA-OSW 1996 "National Hazardous Waste Constituent Survey" database, consisting of 27 sludge wastestreams (387,000 tons) managed by: (1) dewatering, (2) phase separation (filtration), (3) stabilization/chemical fixation, (4) incineration, (5) energy recovery, and (6) landfill (see attached spreadsheet for the sludge data sample).
(b)	** Wastewater system costs (capital & O&M) estimated using cost algorithms displayed in another spreadsheet attached to this report.	
(c)	*** For facilities which generate less than four 20-ton full truckload equivalents of scrubber waters per year for offsite transport, minimum of four manifests per year assigned (40 CFR 262.34 for LQGs).	

Cost Savings Estimate #2: If “Headworks Exemption” Expanded to Only Include Two F005 Spent Solvents (year 2000\$) Benzene + 2-Ethoxyethanol													
				A	B	C	D	E	F	G	H	I	J
Discount rate for annualizing capital costs>				3%			\$18/ton	\$300/trip	\$252/ton	< Key unit cost factors*			
Waste stream item	EPA_ID	1997 aqueous F002 or F005 spent solvent managed (tons/year)	RCRA hazardous waste water management system capital cost**	RCRA hazardous waste water management system capital cost** (annualized over 10 years)	RCRA hazardous waste water management system annual O&M cost**	Annual trucking costs for offsite management***	Annual RCRA manifest cost for offsite shipping	NOTE: The costs in these columns are HYPOTHETICAL premised on all imputed wastewater sludge quantities: (1) hypothetically generated by wastewater treatment units, and (2) managed as RCRA hazardous wastes					
								Hypothetical sludge management cost if RCRA haz waste (\$ per year)	Hypothetical onsite + offsite total annual waste management cost (B+...+F)	Hypothetical annual cost for management as non-haz waste (in surface impoundments)	Hypothetical potential annual cost savings (G - H)	Annual spent solvent waste water sludge quantity affected (tons/year)	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15	IND006050967	150,182	\$0	\$0	\$318,490			\$0	\$318,490	\$197,271	\$121,218	0	
16													
17													

18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30	COD076470525	31,097	\$57,251	\$6,374	\$41,794			\$641,240	\$689,408	\$40,848	\$648,560	2,545
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
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59												
60												
61												
62												
63												
64												
65												
66												
67												
68												
69												
70	NED981723513	2,060	\$37,537	\$4,179	\$12,817	\$37,080	\$30,900	\$42,478	\$127,454	\$2,706	\$124,748	169
71												
72												
73	OHD093945293	1,699	\$0	\$0	\$5,897	\$30,589	\$25,491	\$0	\$61,976	\$2,232	\$59,744	0
74												
75												
76												
77	CA7170090016	1,576	\$0	\$0	\$3,342			\$0	\$3,342	\$2,070	\$1,272	0

78												
79												
80												
81	NYD980592497	1,419	\$0	\$0	\$3,010			\$0	\$3,010	\$1,864	\$1,146	0
82												
83												
84												
85												
86												
87	COD000694869	1,001	\$15,596	\$1,736	\$21,759	\$18,011	\$15,010	\$20,634	\$77,150	\$1,314	\$75,836	82
88												
89												
90												
91												
92												
93												
94												
95												
96												
97												
98	OHD001926740	590	\$36,539	\$4,068	\$11,306	\$10,619	\$8,849	\$12,165	\$47,006	\$590	\$46,415	48
99												
100												
101												
102												
103												
104												
105												
106	IND000646943	495	\$8,867	\$987	\$5,167	\$8,910	\$7,425	\$10,208	\$32,697	\$650	\$32,047	41
107												

108												
109												
110												
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												
121	OHD066060609	341	\$36,369	\$4,049	\$11,049	\$6,136	\$5,114	\$7,030	\$33,378	\$448	\$32,930	28
122												
123												
124												
125												
126												
127												
128												
129												
130												
131												
132												
133												
134	OKD089761290	251	\$0	\$0	\$1,352	\$4,518	\$3,765	\$0	\$9,634	\$330	\$9,305	0
135												
136	IND000646943	242	\$15,496	\$1,725	\$20,969	\$4,363	\$3,636	\$4,998	\$35,692	\$318	\$35,373	20
137												

138												
139												
140												
141												
142												
143												
144												
145												
146	OHD004172565	183	\$36,262	\$4,037	\$10,886	\$3,289	\$2,741	\$3,767	\$24,720	\$240	\$24,480	15
147												
148												
149												
150												
151												
152												
153	IND000646943	142	\$8,867	\$987	\$5,167	\$2,550	\$2,125	\$2,921	\$13,749	\$186	\$13,563	12
154												
155												
156												
157												
158	IND000646943	118	\$8,867	\$987	\$5,167	\$2,120	\$1,767	\$2,429	\$12,470	\$155	\$12,315	10
159												
160												
161	IND000646943	116	\$8,867	\$987	\$5,167	\$2,085	\$1,738	\$2,389	\$12,366	\$152	\$12,214	9
162	MAD000604447	116	\$36,216	\$4,032	\$10,817	\$2,081	\$1,734	\$2,384	\$21,048	\$152	\$20,896	9
163												
164												
165												
166												
167												

168												
169												
170	IND000646943	100	\$8,867	\$987	\$5,167	\$1,804	\$1,503	\$2,067	\$11,529	\$132	\$11,397	8
171												
172												
173												
174												
175												
176												
177												
178												
179												
180												
181												
182												
183												
184												
185	IND000646943	69	\$8,867	\$987	\$5,167	\$1,234	\$1,200	\$1,414	\$10,002	\$90	\$9,912	6
186	IND000646943	67	\$8,867	\$987	\$5,167	\$1,212	\$1,200	\$1,389	\$9,955	\$88	\$9,867	6
187												
188												
189												
190												
191												
192												
193	CTD000604488	51	\$36,172	\$4,027	\$10,750	\$910	\$1,200	\$1,042	\$17,929	\$66	\$17,862	4
194												
195												
196												
197	IND000646943	49.1	\$8,867	\$987	\$5,167	\$884	\$1,200	\$1,013	\$9,251	\$65	\$9,186	4

198	OHD066060609	48.0	\$36,171	\$4,027	\$10,747	\$864	\$1,200	\$990	\$17,828	\$63	\$17,765	4
199												
200												
201	IND000646943	46.3	\$8,867	\$987	\$5,167	\$834	\$1,200	\$956	\$9,144	\$61	\$9,083	4
202												
203												
204												
205	IND000646943	44.8	\$8,867	\$987	\$5,167	\$806	\$1,200	\$923	\$9,082	\$59	\$9,024	4
206												
207												
208												
209												
210												
211												
212												
213	CTD000604488	40.0	\$15,470	\$1,722	\$20,759	\$721	\$1,200	\$826	\$25,227	\$53	\$25,174	3
214												
215												
216	KSD007246846	37.0	\$15,469	\$1,722	\$20,756	\$666	\$1,200	\$763	\$25,107	\$49	\$25,058	3
217	OHD000816629	36.2	\$36,163	\$4,026	\$10,735	\$652	\$1,200	\$746	\$17,359	\$48	\$17,312	3
218												
219												
220												
221												
222	IND000646943	33.0	\$15,469	\$1,722	\$20,751	\$594	\$1,200	\$681	\$24,949	\$43	\$24,906	3
223												
224												
225	MAD053452637	27.1	\$36,156	\$4,025	\$10,726	\$488	\$1,200	\$559	\$16,998	\$36	\$16,962	2
226												
227												

228												
229	KSD007246846	25.5	\$36,155	\$4,025	\$10,724	\$459	\$1,200	\$526	\$16,934	\$33	\$16,900	2
230												
231												
232												
233												
234												
235												
236												
237	IND000646943	21.5	\$8,867	\$987	\$5,167	\$386	\$1,200	\$443	\$8,183	\$28	\$8,155	2
238												
239												
240												
241												
242												
243												
244												
245	MAD000604447	20.4	\$36,152	\$4,025	\$10,719	\$367	\$1,200	\$421	\$16,732	\$27	\$16,705	2
246												
247												
248												
249												
250												
251												
252												
253												
254												
255												
256												
257	CA7170090016	18.7	\$0	\$0	\$40			\$0	\$40	\$25	\$15	0

258												
259	IND000646943	17.2	\$15,467	\$1,722	\$20,735	\$310	\$1,200	\$355	\$24,321	\$23	\$24,298	1
260												
261	FLD980729610	17.1	\$6,328	\$705	\$171	\$308	\$1,200	\$352	\$2,735	\$22	\$2,713	1
262												
263												
264												
265												
266												
267												
268												
269												
270	IND000646943	14.3	\$8,867	\$987	\$5,167	\$257	\$1,200	\$295	\$7,906	\$19	\$7,887	1
271												
272												
273												
274												
275	IND000646943	13.0	\$8,867	\$987	\$5,167	\$233	\$1,200	\$267	\$7,855	\$17	\$7,838	1
276												
277	IND000646943	12.2	\$8,867	\$987	\$5,167	\$219	\$1,200	\$251	\$7,825	\$16	\$7,809	1
278												
279												
280												
281												
282												
283												
284												
285	OHD000816629	10.3	\$36,145	\$4,024	\$10,709	\$185	\$1,200	\$211	\$16,328	\$13	\$16,315	1
286												
287												

288	CTD000604488	9.06	\$36,144	\$4,024	\$10,707	\$163	\$1,200	\$187	\$16,281	\$12	\$16,269	1
289												
290												
291												
292												
293												
294	FLD980729610	7.72	\$4,225	\$470	\$93	\$139	\$1,200	\$159	\$2,061	\$10	\$2,051	1
295												
296												
297												
298												
299	KSD007246846	5.88	\$15,465	\$1,722	\$20,723	\$106	\$1,200	\$121	\$23,872	\$8	\$23,864	0
300												
301	MED985467935	5.65	\$36,142	\$4,024	\$10,704	\$102	\$1,200	\$117	\$16,146	\$7	\$16,138	0
302	NYD002211324	5.25	\$36,142	\$4,024	\$10,703	\$95	\$1,200	\$108	\$16,130	\$7	\$16,123	0
303												
304												
305												
306												
307												
308	OHD066060609	4.64	\$36,141	\$4,023	\$10,703	\$84	\$1,200	\$96	\$16,105	\$6	\$16,099	0
309	ILD000608471	4.40	\$36,141	\$4,023	\$10,703	\$79	\$1,200	\$91	\$16,096	\$6	\$16,090	0
310	IND000646943	4.26	\$15,465	\$1,722	\$20,721	\$77	\$1,200	\$88	\$23,808	\$6	\$23,802	0
311	NYD980592497	4.24	\$0	\$0	\$9			\$0	\$9	\$6	\$3	0
312												
313												
314	OHD066060609	4.11	\$36,141	\$4,023	\$10,702	\$74	\$1,200	\$85	\$16,084	\$5	\$16,079	0
315												
316												
317												

318												
319												
320												
321												
322	IND000646943	2.65	\$8,867	\$987	\$5,167	\$48	\$1,200	\$55	\$7,456	\$3	\$7,453	0
323												
324	FLD981474802	2.40	\$2,333	\$260	\$38	\$43	\$1,200	\$49	\$1,590	\$3	\$1,587	0
325												
326												
327												
328												
329												
330												
331	FLD981474802	1.73	\$36,139	\$4,023	\$10,700	\$31	\$1,200	\$36	\$15,990	\$2	\$15,988	0
332												
333												
334												
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336												
337												
338												
339												
340												
341												
342												
343												
344												
345	MD6150004095	0.88	\$0	\$0	\$2			\$0	\$2	\$1	\$1	0
346												
347												

348												
349												
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351												
352												
353												
354												
355												
356												
357												
358	ALD000622464	0.46	\$36,138	\$4,023	\$10,698	\$8	\$1,200	\$9	\$15,939	\$1	\$15,939	0
359												
360												
361												
362												
363												
364												
365												
366	NYD980592497	0.29	\$0	\$0	\$1			\$0	\$1	\$0	\$0	0
367												
368												
369												
370	ILD000608471	0.22	\$36,138	\$4,023	\$10,698	\$4	\$1,200	\$5	\$15,930	\$0	\$15,930	0
371												
372												
373	MID980683775	0.20	\$15,464	\$1,722	\$20,717	\$4	\$1,200	\$4	\$23,646	\$0	\$23,646	0
374												
375												
376												
377												

378												
379												
380												
381												
382												
383												
Column Totals=	192,509	\$1,103,807	\$122,883	\$867,936	\$147,799	\$154,996	\$770,339	\$2,063,954	\$252,686	\$1,811,268	3,057	
			Number annual manifests =			411		Facility count =			25	
Wastestream count =											58	
Average per facility =	7,700	\$44,152	\$4,915	\$34,717	\$5,912	\$6,200	\$30,814	\$82,558	\$10,107	\$72,451	122	
Average per wastestream =	3,319	\$19,031	\$2,119	\$14,964	\$2,548	\$2,672	\$13,282	\$35,585	\$4,357	\$31,229	53	
Median per wastestream =	30	\$15,465	\$1,722	\$10,701	\$541	\$1,200	\$354	\$16,101	\$39	\$16,095	1	

**Explanatory Notes:**

- (a) \* Key unit cost factors:
- ! Waste trucking unit cost: **\$18/ton** represents the average incremental cost for trucking RCRA hazardous wastes, compared to the average cost of trucking non-hazardous materials, based on OSW triangulation of three data sources on trucking costs, based on average trucking one-way distance of 200 miles, which approximately represents the national average distance between RCRA hazardous waste generators, and RCRA-permitted hazardous waste treatment, storage, disposal, & recycling facilities (TSDFs); see attached spreadsheet for data source and derivation of this unit cost factor.
- ! RCRA manifest unit cost: **\$300/trip** represents average manifest paperwork cost per truck shipment over the entire chain-of-custody from waste generators to waste transporters to waste receivers to filing the manifest with state governments for recordkeeping (see attached spreadsheet for source and derivation of manifest unit cost).
- ! Sludge management unit cost: **\$252/ton** represents an average unit cost based on a data sample of sludge management quantities and methods from the USEPA-OSW 1996 "National Hazardous Waste Constituent Survey" database, consisting of 27 sludge wastestreams (387,000 tons) managed by: (1) dewatering, (2) phase separation (filtration), (3) stabilization/chemical fixation, (4) incineration, (5) energy recovery, and (6) landfill (see attached spreadsheet for the sludge data sample).
- (b) \*\* Wastewater system costs (capital & O&M) estimated using cost algorithms displayed in another spreadsheet attached to this report.
- (c) \*\*\* For facilities which generate less than four 20-ton full truckload equivalents of scrubber waters per year for offsite transport, minimum of four manifests per year assigned (40 CFR 262.34 for LQGs).

**“Headworks Exemption” for F005 Benzene & F005 2-Ethoxyethanol**

**“Direct Monitoring” Costs:**

**Microeconomic Break- even Analysis to Determine “Lower- Bound” Estimate of Potential Claimants and National Cost Savings**

**By Off- Setting Potential Savings in Wastewater Treatment Costs, with the Cost of Direct Monitoring**

**\* Source: wastewater treatment system headworks monitoring frequency adopted from**

**USEPA Office of Water, “Detailed Costing Document For The Centralized Waste Treatment Industry”, EPA- 821- R- 98- 016, Dec. 1998, Section 5.2.**

**Note: Existing CWA monitoring requirements are mostly for effluent wastewaters rather than influent headworks wastewaters;  
consequently, direct monitoring costs are assumed incremental for compliance with the RCRA “headworks exemption”**

Waste stream item	EPA ID	1997 aqueous spent solvent managed (tons/year)	Onsite/ Offsite Management	Potential annual cost savings for headworks exemption	Headworks organics WW monitoring frequency (NPDES samples/ month)*	Annual minimum samples	EPA method 1624 unit cost for volatile organics sample analysis (\$/sample)	Headworks on-site monitoring cost (\$/year)	Potential annual cost savings net direct monitoring cost	Achieve minimum breakeven with on-site direct monitoring costs?	Waste streams with known benzene or 2ethoxy-ethanol	Potential annual cost savings if "Yes" for benzene or 2ethoxy-ethanol wastes	Annual tons aqueous spent solvent waste water affected	Annual tons spent solvent waste water sludge affected
1	TND003376928	42,712,496	On site	\$891,119,466	4	48	\$97.50	\$4,680	\$891,114,786	Yes				
2	PAD003043353	2,485,320	On site	\$695,824	4	48	\$97.50	\$4,680	\$691,144	Yes				
3	NYD003930849	717,097	On site	\$267,691	4	48	\$97.50	\$4,680	\$263,011	Yes				
4	NYR000030726	583,820	On site	\$12,130,722	4	48	\$97.50	\$4,680	\$12,126,042	Yes				
5	NYD059385120	557,330	On site	\$624,151	4	48	\$97.50	\$4,680	\$619,471	Yes				
6	NYD002211324	498,170	On site	\$557,898	4	48	\$97.50	\$4,680	\$553,218	Yes				
7	IND000806935	443,616	On site	\$496,803	4	48	\$97.50	\$4,680	\$492,123	Yes				
8	MAD001402320	371,026	On site	\$415,510	4	48	\$97.50	\$4,680	\$410,830	Yes				
9	ALD079109013	343,704	On site	\$6,778,619	4	48	\$97.50	\$4,680	\$6,773,939	Yes				
10	GAD039046800	303,995	On site	\$340,443	4	48	\$97.50	\$4,680	\$335,763	Yes				
11	PAD043882323	208,333	On site	\$233,311	4	48	\$97.50	\$4,680	\$228,631	Yes				
12	CAD093365435	207,042	On site	\$4,097,327	4	48	\$97.50	\$4,680	\$4,092,647	Yes				
13	LA4800014587	206,023	On site	\$230,724	4	48	\$97.50	\$4,680	\$226,044	Yes				
14	CA1800090010	154,953	On site	\$3,075,354	4	48	\$97.50	\$4,680	\$3,070,674	Yes				
15	IND006050967	150,182	On site	\$121,218	4	48	\$97.50	\$4,680	\$116,538	Yes	Yes	\$116,538	150,182	0
16	MAD058060476	129,000	On site	\$144,466	4	48	\$97.50	\$4,680	\$139,786	Yes				
17	IND006050967	124,053	On site	\$138,926	4	48	\$97.50	\$4,680	\$134,246	Yes				
18	NYD980592497	105,064	On site	\$117,661	4	48	\$97.50	\$4,680	\$112,981	Yes				
19	ORD009023466	101,312	On site	\$113,459	4	48	\$97.50	\$4,680	\$108,779	Yes				
20	NYD980592497	93,607	On site	\$104,830	4	48	\$97.50	\$4,680	\$100,150	Yes				
21	CAD093365435	88,291	On site	\$1,836,974	4	48	\$97.50	\$4,680	\$1,832,294	Yes				
22	NCD003217437	75,063	On site	\$84,062	4	48	\$97.50	\$4,680	\$79,382	Yes				
23	MAD001923408	74,854	On site	\$33,919	4	48	\$97.50	\$4,680	\$29,239	Yes				

24	NYD002220804	65,291	On site	\$1,355,779	4	48	\$97.50	\$4,680	\$1,351,099	Yes				
25	NYD003930849	55,311	On site	\$61,942	4	48	\$97.50	\$4,680	\$57,262	Yes				
26	NCD051330280	51,782	On site	\$57,991	4	48	\$97.50	\$4,680	\$53,311	Yes				
27	MAD000846493	47,726	On site	\$963,333	4	48	\$97.50	\$4,680	\$958,653	Yes				
28	MAD001033190	45,377	On site	\$50,817	4	48	\$97.50	\$4,680	\$46,137	Yes				
29	OKD079986568	37,654	On site	\$42,168	4	48	\$97.50	\$4,680	\$37,488	Yes				
30	COD076470525	31,097	On site	\$648,560	4	48	\$97.50	\$4,680	\$643,880	Yes	Yes	\$643,880	31,097	2,545
31	MAD062163191	29,372	On site	\$32,894	4	48	\$97.50	\$4,680	\$28,214	Yes				
32	NYD002211324	28,298	On site	\$31,691	4	48	\$97.50	\$4,680	\$27,011	Yes				
33	NYD084006741	27,443	On site	\$544,577	4	48	\$97.50	\$4,680	\$539,897	Yes				
34	NYD980592497	23,803	On site	\$26,657	4	48	\$97.50	\$4,680	\$21,977	Yes				
35	NJD002385730	23,656	On site	\$504,473	4	48	\$97.50	\$4,680	\$499,793	Yes				
36	NYD980592497	22,031	On site	\$24,672	4	48	\$97.50	\$4,680	\$19,992	Yes				
37	VAD023741705	19,650	On site	\$402,914	4	48	\$97.50	\$4,680	\$398,234	Yes				
38	NYD980592497	16,824	On site	\$18,841	4	48	\$97.50	\$4,680	\$14,161	Yes				
39	NYD980592497	15,494	On site	\$17,352	4	48	\$97.50	\$4,680	\$12,672	Yes				
40	KSD007482011	15,072	On site	\$16,879	4	48	\$97.50	\$4,680	\$12,199	Yes				
41	MND000819268	15,007	On site	\$311,813	4	48	\$97.50	\$4,680	\$307,133	Yes				
42	PAD041399403	14,554	On site	\$16,299	4	48	\$97.50	\$4,680	\$11,619	Yes				
43	FL6170024412	7,503	On site	\$8,402	4	48	\$97.50	\$4,680	\$3,722	Yes				
44	ALD003297116	6,839	On site	\$166,224	4	48	\$97.50	\$4,680	\$161,544	Yes				
45	NYD986954147	6,713	On site	\$7,518	4	48	\$97.50	\$4,680	\$2,838	Yes				
46	NYD980592497	6,365	On site	\$7,129	4	48	\$97.50	\$4,680	\$2,449	Yes				
47	FLD046771952	5,930	On site	\$6,641	4	48	\$97.50	\$4,680	\$1,961	Yes				
48	OKD000632737	5,801	On site	\$6,496	4	48	\$97.50	\$4,680	\$1,816	Yes				
49	NYD041292509	5,472	On site	\$6,128	4	48	\$97.50	\$4,680	\$1,448	Yes				
50	VAD988170445	5,375	On site	\$132,879	4	48	\$97.50	\$4,680	\$128,199	Yes				
51	NYD002100352	4,966	On site	\$114,815	4	48	\$97.50	\$4,680	\$110,135	Yes				
52	NYD059385120	4,863	On site	\$5,446	4	48	\$97.50	\$4,680	\$766	Yes				
53	NYD980592497	4,497	On site	\$5,037	4	48	\$97.50	\$4,680	\$357	Yes				
54	NYD980592497	4,494	On site	\$5,032	4	48	\$97.50	\$4,680	\$352	Yes				
55	NYD980592497	4,492	On site	\$5,030	4	48	\$97.50	\$4,680	\$350	Yes				
56	WAR000008979	4,313	On site	\$111,606	4	48	\$97.50	\$4,680	\$106,926	Yes				
57	NYD980592497	3,671	On site	\$4,111	4	48	\$97.50	\$4,680	(\$569)	No				

58	NYD980592497	3,435	On site	\$3,846	4	48	\$97.50	\$4,680	(\$834)	No				
59	NYD980592497	3,404	On site	\$3,812	4	48	\$97.50	\$4,680	(\$868)	No				
60	COD007068646	3,381	On site	\$3,786	4	48	\$97.50	\$4,680	(\$894)	No				
61	TXD981512122	3,176	On site	\$81,886	4	48	\$97.50	\$4,680	\$77,206	Yes				
62	UTD009081357	3,048	On site	\$3,414	4	48	\$97.50	\$4,680	(\$1,266)	No				
63	COD980952097	2,998	On site	\$76,212	4	48	\$97.50	\$4,680	\$71,532	Yes				
64	FL6170024412	2,850	On site	\$3,192	4	48	\$97.50	\$4,680	(\$1,488)	No				
65	CAD000030494	2,848	On site	\$81,332	4	48	\$97.50	\$4,680	\$76,652	Yes				
66	CA1800090010	2,810	On site	\$72,950	4	48	\$97.50	\$4,680	\$68,270	Yes				
67	TXD077603371	2,801	Off site	\$98,287	4	48	\$97.50	\$4,680	\$93,607	Yes				
68	NYD980592497	2,671	On site	\$2,991	4	48	\$97.50	\$4,680	(\$1,689)	No				
69	NYD000824482	2,096	On site	\$2,347	4	48	\$97.50	\$4,680	(\$2,333)	No				
70	NED981723513	2,060	Off site	\$124,748	4	48	\$97.50	\$4,680	\$120,068	Yes	Yes	\$120,068	2,060	169
71	FLD004073177	1,969	On site	\$2,205	4	48	\$97.50	\$4,680	(\$2,475)	No				
72	GAD061022216	1,892	On site	\$61,550	4	48	\$97.50	\$4,680	\$56,870	Yes				
73	OHD093945293	1,699	Off site	\$59,744	4	48	\$97.50	\$4,680	\$55,064	Yes	Yes	\$55,064	1,699	0
74	NYD980592497	1,674	On site	\$1,874	4	48	\$97.50	\$4,680	(\$2,806)	No				
75	WA7890008967	1,650	On site	\$45,239	4	48	\$97.50	\$4,680	\$40,559	Yes				
76	NYD980592497	1,591	On site	\$1,782	4	48	\$97.50	\$4,680	(\$2,898)	No				
77	CA7170090016	1,576	On site	\$1,272	4	48	\$97.50	\$4,680	(\$3,408)	No	No			
78	NYD980592497	1,539	On site	\$1,723	4	48	\$97.50	\$4,680	(\$2,957)	No				
79	UTD001705029	1,522	On site	\$1,705	4	48	\$97.50	\$4,680	(\$2,975)	No				
80	NJD002385730	1,501	On site	\$45,833	4	48	\$97.50	\$4,680	\$41,153	Yes				
81	NYD980592497	1,419	On site	\$1,146	4	48	\$97.50	\$4,680	(\$3,534)	No	No			
82	TXD077603371	1,293	Off site	\$84,213	4	48	\$97.50	\$4,680	\$79,533	Yes				
83	NYD003930849	1,266	On site	\$1,418	4	48	\$97.50	\$4,680	(\$3,262)	No				
84	LAD985218742	1,251	On site	\$1,401	4	48	\$97.50	\$4,680	(\$3,279)	No				
85	MID000820381	1,202	On site	\$1,346	4	48	\$97.50	\$4,680	(\$3,334)	No				
86	NYD980592497	1,084	On site	\$1,213	4	48	\$97.50	\$4,680	(\$3,467)	No				
87	COD000694869	1,001	Off site	\$75,836	4	48	\$97.50	\$4,680	\$71,156	Yes	Yes	\$71,156	1,001	82
88	OKD000758599	913	On site	\$35,299	4	48	\$97.50	\$4,680	\$30,619	Yes				
89	WID000808824	878	Off site	\$61,881	4	48	\$97.50	\$4,680	\$57,201	Yes				
90	WID990829475	878	Off site	\$69,549	4	48	\$97.50	\$4,680	\$64,869	Yes				
91	NYD980592497	848	On site	\$949	4	48	\$97.50	\$4,680	(\$3,731)	No				

92	CAD000030494	804	On site	\$27,756	4	48	\$97.50	\$4,680	\$23,076	Yes				
93	WID000808824	746	Off site	\$54,789	4	48	\$97.50	\$4,680	\$50,109	Yes				
94	GAD003324985	727	On site	\$814	4	48	\$97.50	\$4,680	(\$3,866)	No				
95	NYD981561962	705	Off site	\$52,614	4	48	\$97.50	\$4,680	\$47,934	Yes				
96	TXD052649027	670	Off site	\$24,310	4	48	\$97.50	\$4,680	\$19,630	Yes				
97	PAD030069140	616	Off site	\$47,789	4	48	\$97.50	\$4,680	\$43,109	Yes				
98	OHD001926740	590	Off site	\$46,415	4	48	\$97.50	\$4,680	\$41,735	Yes	Yes	\$41,735	590	48
99	KYD053348108	580	On site	\$17,538	4	48	\$97.50	\$4,680	\$12,858	Yes				
100	CAD008302903	563	Off site	\$44,949	4	48	\$97.50	\$4,680	\$40,269	Yes				
101	FL6170024412	552	On site	\$618	4	48	\$97.50	\$4,680	(\$4,062)	No				
102	NJD056356066	550	Off site	\$35,073	4	48	\$97.50	\$4,680	\$30,393	Yes				
103	OHD980681571	528	Off site	\$43,062	4	48	\$97.50	\$4,680	\$38,382	Yes				
104	TXD981898760	499	Off site	\$43,642	4	48	\$97.50	\$4,680	\$38,962	Yes				
105	NYD980592497	495	On site	\$555	4	48	\$97.50	\$4,680	(\$4,125)	No				
106	IND000646943	495	Off site	\$32,047	4	48	\$97.50	\$4,680	\$27,367	Yes	Yes	\$27,367	495	41
107	AZD009015389	487	Off site	\$31,775	4	48	\$97.50	\$4,680	\$27,095	Yes				
108	WVD988776852	476	Off site	\$17,450	4	48	\$97.50	\$4,680	\$12,770	Yes				
109	NYD980592497	473	On site	\$530	4	48	\$97.50	\$4,680	(\$4,150)	No				
110	UTD001705029	462	On site	\$1,700	4	48	\$97.50	\$4,680	(\$2,980)	No				
111	NYD003930849	455	On site	\$510	4	48	\$97.50	\$4,680	(\$4,170)	No				
112	NYD980592497	425	On site	\$476	4	48	\$97.50	\$4,680	(\$4,204)	No				
113	GAD003324985	422	On site	\$473	4	48	\$97.50	\$4,680	(\$4,207)	No				
114	AZD009015389	421	Off site	\$15,470	4	48	\$97.50	\$4,680	\$10,790	Yes				
115	UTD001705029	362	Off site	\$13,387	4	48	\$97.50	\$4,680	\$8,707	Yes				
116	GAD033582461	362	On site	\$22,229	4	48	\$97.50	\$4,680	\$17,549	Yes				
117	WAR000008979	358	On site	\$29,836	4	48	\$97.50	\$4,680	\$25,156	Yes				
118	PAD030069140	353	Off site	\$33,681	4	48	\$97.50	\$4,680	\$29,001	Yes				
119	FL6170024412	348	On site	\$390	4	48	\$97.50	\$4,680	(\$4,290)	No				
120	ILD980613913	347	Off site	\$12,848	4	48	\$97.50	\$4,680	\$8,168	Yes				
121	OHD066060609	341	Off site	\$32,930	4	48	\$97.50	\$4,680	\$28,250	Yes	Yes	\$28,250	341	28
122	ILD005083316	334	Off site	\$32,689	4	48	\$97.50	\$4,680	\$28,009	Yes				
123	OHD980681571	332	Off site	\$32,555	4	48	\$97.50	\$4,680	\$27,875	Yes				
124	PRD090036021	295	On site	\$330	4	48	\$97.50	\$4,680	(\$4,350)	No				
125	WID990829475	288	Off site	\$37,883	4	48	\$97.50	\$4,680	\$33,203	Yes				

126	CTD064828726	284	On site	\$318	4	48	\$97.50	\$4,680	(\$4,362)	No				
127	OHD004182408	278	Off site	\$29,678	4	48	\$97.50	\$4,680	\$24,998	Yes				
128	OKD981909849	276	Off site	\$10,283	4	48	\$97.50	\$4,680	\$5,603	Yes				
129	MAD000844597	275	Off site	\$18,833	4	48	\$97.50	\$4,680	\$14,153	Yes				
130	WID990829475	260	Off site	\$36,395	4	48	\$97.50	\$4,680	\$31,715	Yes				
131	MAR000007955	259	Off site	\$31,017	4	48	\$97.50	\$4,680	\$26,337	Yes				
132	MAD980912323	256	Off site	\$36,163	4	48	\$97.50	\$4,680	\$31,483	Yes				
133	RID058065707	251	Off site	\$17,332	4	48	\$97.50	\$4,680	\$12,652	Yes				
134	OKD089761290	251	Off site	\$9,305	4	48	\$97.50	\$4,680	\$4,625	Yes	Yes	\$4,625	251	0
135	NYD980592497	248	On site	\$277	4	48	\$97.50	\$4,680	(\$4,403)	No				
136	IND000646943	242	Off site	\$35,373	4	48	\$97.50	\$4,680	\$30,693	Yes	Yes	\$30,693	242	20
137	NYD002081396	239	On site	\$22,072	4	48	\$97.50	\$4,680	\$17,392	Yes				
138	MND985694736	237	On site	\$16,042	4	48	\$97.50	\$4,680	\$11,362	Yes				
139	WAR000008979	223	On site	\$27,051	4	48	\$97.50	\$4,680	\$22,371	Yes				
140	MAD980912323	219	Off site	\$34,215	4	48	\$97.50	\$4,680	\$29,535	Yes				
141	IND085616837	200	Off site	\$25,444	4	48	\$97.50	\$4,680	\$20,764	Yes				
142	ILD980613913	190	Off site	\$24,918	4	48	\$97.50	\$4,680	\$20,238	Yes				
143	CTD001449784	186	Off site	\$24,709	4	48	\$97.50	\$4,680	\$20,029	Yes				
144	MAD001402320	186	Off site	\$24,700	4	48	\$97.50	\$4,680	\$20,020	Yes				
145	PAD980551964	183	Off site	\$13,047	4	48	\$97.50	\$4,680	\$8,367	Yes				
146	OHD004172565	183	Off site	\$24,480	4	48	\$97.50	\$4,680	\$19,800	Yes	Yes	\$19,800	183	15
147	NYD980592497	182	On site	\$204	4	48	\$97.50	\$4,680	(\$4,476)	No				
148	NYD980592497	181	On site	\$202	4	48	\$97.50	\$4,680	(\$4,478)	No				
149	FL6170024412	178	Off site	\$6,736	4	48	\$97.50	\$4,680	\$2,056	Yes				
150	NYD980592497	170	On site	\$190	4	48	\$97.50	\$4,680	(\$4,490)	No				
151	PAD067362327	161	Off site	\$23,358	4	48	\$97.50	\$4,680	\$18,678	Yes				
152	MAD000844597	151	Off site	\$10,982	4	48	\$97.50	\$4,680	\$6,302	Yes				
153	IND000646943	142	Off site	\$13,563	4	48	\$97.50	\$4,680	\$8,883	Yes	Yes	\$8,883	142	12
154	NYD980592497	141	On site	\$158	4	48	\$97.50	\$4,680	(\$4,522)	No				
155	NYD980592497	135	On site	\$151	4	48	\$97.50	\$4,680	(\$4,529)	No				
156	NYD980592497	133	On site	\$148	4	48	\$97.50	\$4,680	(\$4,532)	No				
157	CTD001840974	121	Off site	\$21,230	4	48	\$97.50	\$4,680	\$16,550	Yes				
158	IND000646943	118	Off site	\$12,315	4	48	\$97.50	\$4,680	\$7,635	Yes	Yes	\$7,635	118	10
159	ILD980613913	116	Off site	\$4,476	4	48	\$97.50	\$4,680	(\$204)	No				

160	PAD067098822	116	Off site	\$28,691	4	48	\$97.50	\$4,680	\$24,011	Yes				
161	IND000646943	116	Off site	\$12,214	4	48	\$97.50	\$4,680	\$7,534	Yes	Yes	\$7,534	116	9
162	MAD000604447	116	Off site	\$20,896	4	48	\$97.50	\$4,680	\$16,216	Yes	Yes	\$16,216	116	9
163	TXD077603371	115	Off site	\$4,403	4	48	\$97.50	\$4,680	(\$277)	No				
164	NYD980592497	110	On site	\$124	4	48	\$97.50	\$4,680	(\$4,556)	No				
165	KYD000770313	109	Off site	\$8,235	4	48	\$97.50	\$4,680	\$3,555	Yes				
166	NCD980842132	106	Off site	\$20,432	4	48	\$97.50	\$4,680	\$15,752	Yes				
167	NYD980592497	105	On site	\$118	4	48	\$97.50	\$4,680	(\$4,562)	No				
168	NYD980592497	103	On site	\$115	4	48	\$97.50	\$4,680	(\$4,565)	No				
169	COD160887741	100	On site	\$112	4	48	\$97.50	\$4,680	(\$4,568)	No				
170	IND000646943	100	Off site	\$11,397	4	48	\$97.50	\$4,680	\$6,717	Yes	Yes	\$6,717	100	8
171	ILD000608471	100	Off site	\$20,068	4	48	\$97.50	\$4,680	\$15,388	Yes				
172	MAD019371079	94	Off site	\$19,760	4	48	\$97.50	\$4,680	\$15,080	Yes				
173	VAD982362428	93	Off site	\$7,204	4	48	\$97.50	\$4,680	\$2,524	Yes				
174	ILD005083316	91	Off site	\$19,626	4	48	\$97.50	\$4,680	\$14,946	Yes				
175	TXD056542749	87	On site	\$24,241	4	48	\$97.50	\$4,680	\$19,561	Yes				
176	MAD980912323	85	Off site	\$6,661	4	48	\$97.50	\$4,680	\$1,981	Yes				
177	PAD002311884	82	Off site	\$19,141	4	48	\$97.50	\$4,680	\$14,461	Yes				
178	NYD980592497	81	On site	\$91	4	48	\$97.50	\$4,680	(\$4,589)	No				
179	WID000808824	79	Off site	\$18,996	4	48	\$97.50	\$4,680	\$14,316	Yes				
180	CTD055310759	79	Off site	\$26,682	4	48	\$97.50	\$4,680	\$22,002	Yes				
181	MOD071987416	76	Off site	\$6,097	4	48	\$97.50	\$4,680	\$1,417	Yes				
182	TXD058276130	76	Off site	\$3,024	4	48	\$97.50	\$4,680	(\$1,656)	No				
183	GAD051010429	74	Off site	\$26,489	4	48	\$97.50	\$4,680	\$21,809	Yes				
184	NYD980592497	73	On site	\$82	4	48	\$97.50	\$4,680	(\$4,598)	No				
185	IND000646943	69	Off site	\$9,912	4	48	\$97.50	\$4,680	\$5,232	Yes	Yes	\$5,232	69	6
186	IND000646943	67	Off site	\$9,867	4	48	\$97.50	\$4,680	\$5,187	Yes	Yes	\$5,187	67	6
187	NYD980592497	63	On site	\$70	4	48	\$97.50	\$4,680	(\$4,610)	No				
188	TXD052649027	60	Off site	\$2,678	4	48	\$97.50	\$4,680	(\$2,002)	No				
189	CTD980668198	58	Off site	\$2,616	4	48	\$97.50	\$4,680	(\$2,064)	No				
190	NJD002147023	56	Off site	\$18,090	4	48	\$97.50	\$4,680	\$13,410	Yes				
191	CAD981375983	54	On site	\$23,564	4	48	\$97.50	\$4,680	\$18,884	Yes				
192	FLD982102295	52	On site	\$58	4	48	\$97.50	\$4,680	(\$4,622)	No				
193	CTD000604488	51	Off site	\$17,862	4	48	\$97.50	\$4,680	\$13,182	Yes	Yes	\$13,182	51	4

194	NYD003930849	50.0	On site	\$56	4	48	\$97.50	\$4,680	(\$4,624)	No				
195	ALD983176520	50.0	On site	\$23,472	4	48	\$97.50	\$4,680	\$18,792	Yes				
196	NYD980592497	49.2	On site	\$55	4	48	\$97.50	\$4,680	(\$4,625)	No				
197	IND000646943	49.1	Off site	\$9,186	4	48	\$97.50	\$4,680	\$4,506	Yes	Yes	\$4,506	49	4
198	OHD066060609	48.0	Off site	\$17,765	4	48	\$97.50	\$4,680	\$13,085	Yes	Yes	\$13,085	48	4
199	NYD980592497	46.9	On site	\$53	4	48	\$97.50	\$4,680	(\$4,627)	No				
200	MAD001402320	46.8	Off site	\$17,734	4	48	\$97.50	\$4,680	\$13,054	Yes				
201	IND000646943	46.3	Off site	\$9,083	4	48	\$97.50	\$4,680	\$4,403	Yes	Yes	\$4,403	46	4
202	LAD000757286	45.3	Off site	\$2,331	4	48	\$97.50	\$4,680	(\$2,349)	No				
203	ILD000608471	45.2	Off site	\$17,673	4	48	\$97.50	\$4,680	\$12,993	Yes				
204	MID083684290	45.1	Off site	\$25,383	4	48	\$97.50	\$4,680	\$20,703	Yes				
205	IND000646943	44.8	Off site	\$9,024	4	48	\$97.50	\$4,680	\$4,344	Yes	Yes	\$4,344	45	4
206	RID058065707	44.5	Off site	\$4,374	4	48	\$97.50	\$4,680	(\$306)	No				
207	IND000646943	43.7	Off site	\$8,999	4	48	\$97.50	\$4,680	\$4,319	Yes				
208	ILD000608471	42.4	Off site	\$17,563	4	48	\$97.50	\$4,680	\$12,883	Yes				
209	NJD002147023	42.0	Off site	\$17,547	4	48	\$97.50	\$4,680	\$12,867	Yes				
210	PAD980550412	41.7	Off site	\$4,217	4	48	\$97.50	\$4,680	(\$463)	No				
211	OKD079986568	41.7	Off site	\$8,923	4	48	\$97.50	\$4,680	\$4,243	Yes				
212	CTD001840974	41.0	Off site	\$17,510	4	48	\$97.50	\$4,680	\$12,830	Yes				
213	CTD000604488	40.0	Off site	\$25,174	4	48	\$97.50	\$4,680	\$20,494	Yes	Yes	\$20,494	40	3
214	ILD000608471	40.0	Off site	\$17,470	4	48	\$97.50	\$4,680	\$12,790	Yes				
215	NYD000707901	38.5	Off site	\$17,412	4	48	\$97.50	\$4,680	\$12,732	Yes				
216	KSD007246846	37.0	Off site	\$25,058	4	48	\$97.50	\$4,680	\$20,378	Yes	Yes	\$20,378	37	3
217	OHD000816629	36.2	Off site	\$17,312	4	48	\$97.50	\$4,680	\$12,632	Yes	Yes	\$12,632	36	3
218	TXD056542749	34.9	On site	\$23,159	4	48	\$97.50	\$4,680	\$18,479	Yes				
219	TXD056542749	34.9	On site	\$23,159	4	48	\$97.50	\$4,680	\$18,479	Yes				
220	CTD001449784	34.6	Off site	\$17,262	4	48	\$97.50	\$4,680	\$12,582	Yes				
221	TXD052649027	33.0	Off site	\$17,201	4	48	\$97.50	\$4,680	\$12,521	Yes				
222	IND000646943	33.0	Off site	\$24,906	4	48	\$97.50	\$4,680	\$20,226	Yes	Yes	\$20,226	33	3
223	NYD003930849	32.0	On site	\$36	4	48	\$97.50	\$4,680	(\$4,644)	No				
224	MAR000007559	30.6	On site	\$34	4	48	\$97.50	\$4,680	(\$4,646)	No				
225	MAD053452637	27.1	Off site	\$16,962	4	48	\$97.50	\$4,680	\$12,282	Yes	Yes	\$12,282	27	2
226	NYD980592497	26.8	On site	\$30	4	48	\$97.50	\$4,680	(\$4,650)	No				
227	NYD002067932	25.7	Off site	\$16,916	4	48	\$97.50	\$4,680	\$12,236	Yes				

228	OHD980681571	25.6	Off site	\$16,911	4	48	\$97.50	\$4,680	\$12,231	Yes				
229	KSD007246846	25.5	Off site	\$16,900	4	48	\$97.50	\$4,680	\$12,220	Yes	Yes	\$12,220	25	2
230	VAD980831176	24.0	On site	\$6,624	4	48	\$97.50	\$4,680	\$1,944	Yes				
231	IND000646943	23.1	Off site	\$8,222	4	48	\$97.50	\$4,680	\$3,542	Yes				
232	ILD000608471	22.4	Off site	\$16,789	4	48	\$97.50	\$4,680	\$12,109	Yes				
233	ILD000608471	22.4	Off site	\$16,789	4	48	\$97.50	\$4,680	\$12,109	Yes				
234	ILD000608471	22.0	Off site	\$16,773	4	48	\$97.50	\$4,680	\$12,093	Yes				
235	MID083684290	21.9	Off site	\$24,485	4	48	\$97.50	\$4,680	\$19,805	Yes				
236	KSD980854285	21.8	Off site	\$8,172	4	48	\$97.50	\$4,680	\$3,492	Yes				
237	IND000646943	21.5	Off site	\$8,155	4	48	\$97.50	\$4,680	\$3,475	Yes	Yes	\$3,475	21	2
238	MOD071987416	21.0	Off site	\$24,450	4	48	\$97.50	\$4,680	\$19,770	Yes				
239	NYD980592497	20.9	On site	\$23	4	48	\$97.50	\$4,680	(\$4,657)	No				
240	NJD002385730	20.9	On site	\$15,153	4	48	\$97.50	\$4,680	\$10,473	Yes				
241	ILD000608471	20.8	Off site	\$16,727	4	48	\$97.50	\$4,680	\$12,047	Yes				
242	ILD000608471	20.8	Off site	\$16,727	4	48	\$97.50	\$4,680	\$12,047	Yes				
243	FL6170024412	20.5	Off site	\$1,745	4	48	\$97.50	\$4,680	(\$2,935)	No				
244	MAR000007955	20.5	Off site	\$19,356	4	48	\$97.50	\$4,680	\$14,676	Yes				
245	MAD000604447	20.4	Off site	\$16,705	4	48	\$97.50	\$4,680	\$12,025	Yes	Yes	\$12,025	20.4	1.7
246	ILD000608471	20.4	Off site	\$16,711	4	48	\$97.50	\$4,680	\$12,031	Yes				
247	MAD019371079	20.2	Off site	\$16,704	4	48	\$97.50	\$4,680	\$12,024	Yes				
248	ILD000608471	20.0	Off site	\$16,696	4	48	\$97.50	\$4,680	\$12,016	Yes				
249	IND000646943	20.0	Off site	\$24,412	4	48	\$97.50	\$4,680	\$19,732	Yes				
250	CTD980668198	19.9	Off site	\$24,408	4	48	\$97.50	\$4,680	\$19,728	Yes				
251	ILD000608471	19.2	Off site	\$16,665	4	48	\$97.50	\$4,680	\$11,985	Yes				
252	ILD000608471	19.2	Off site	\$16,665	4	48	\$97.50	\$4,680	\$11,985	Yes				
253	VAR000004978	19.1	Off site	\$8,074	4	48	\$97.50	\$4,680	\$3,394	Yes				
254	ILD000608471	18.8	Off site	\$16,649	4	48	\$97.50	\$4,680	\$11,969	Yes				
255	ILD000608471	18.8	Off site	\$16,649	4	48	\$97.50	\$4,680	\$11,969	Yes				
256	OKD987083946	18.8	Off site	\$1,703	4	48	\$97.50	\$4,680	(\$2,977)	No				
257	CA7170090016	18.7	On site	\$15	4	48	\$97.50	\$4,680	(\$4,665)	No	No			
258	TXD056542749	17.4	On site	\$22,799	4	48	\$97.50	\$4,680	\$18,119	Yes				
259	IND000646943	17.2	Off site	\$24,298	4	48	\$97.50	\$4,680	\$19,618	Yes	Yes	\$19,618	17.2	1.4
260	DED053304770	17.1	On site	\$19	4	48	\$97.50	\$4,680	(\$4,661)	No				
261	FLD980729610	17.1	Off site	\$2,713	4	48	\$97.50	\$4,680	(\$1,967)	No	No			

262	NJD006980924	17.0	On site	\$6,487	4	48	\$97.50	\$4,680	\$1,807	Yes				
263	UTD001705029	16.5	On site	\$19	4	48	\$97.50	\$4,680	(\$4,661)	No				
264	IND000646943	15.8	Off site	\$24,250	4	48	\$97.50	\$4,680	\$19,570	Yes				
265	PAD004498432	15.6	Off site	\$2,621	4	48	\$97.50	\$4,680	(\$2,059)	No				
266	IND085616837	14.9	Off site	\$16,497	4	48	\$97.50	\$4,680	\$11,817	Yes				
267	ILD000608471	14.8	Off site	\$16,494	4	48	\$97.50	\$4,680	\$11,814	Yes				
268	GAR000012336	14.8	Off site	\$7,911	4	48	\$97.50	\$4,680	\$3,231	Yes				
269	NCD986177061	14.4	Off site	\$16,480	4	48	\$97.50	\$4,680	\$11,800	Yes				
270	IND000646943	14.3	Off site	\$7,887	4	48	\$97.50	\$4,680	\$3,207	Yes	Yes	\$3,207	14.3	1.2
271	IND000646943	14.1	Off site	\$7,885	4	48	\$97.50	\$4,680	\$3,205	Yes				
272	ILD000608471	13.6	Off site	\$16,448	4	48	\$97.50	\$4,680	\$11,768	Yes				
273	TXD052649027	13.4	Off site	\$24,156	4	48	\$97.50	\$4,680	\$19,476	Yes				
274	IND000646943	13.3	Off site	\$7,854	4	48	\$97.50	\$4,680	\$3,174	Yes				
275	IND000646943	13.0	Off site	\$7,838	4	48	\$97.50	\$4,680	\$3,158	Yes	Yes	\$3,158	13.0	1.1
276	TXD052649027	12.6	Off site	\$16,409	4	48	\$97.50	\$4,680	\$11,729	Yes				
277	IND000646943	12.2	Off site	\$7,809	4	48	\$97.50	\$4,680	\$3,129	Yes	Yes	\$3,129	12.2	1.0
278	CAD982437089	12.1	Off site	\$24,106	4	48	\$97.50	\$4,680	\$19,426	Yes				
279	CTD000845198	11.9	Off site	\$24,099	4	48	\$97.50	\$4,680	\$19,419	Yes				
280	NYD980592497	11.7	On site	\$13	4	48	\$97.50	\$4,680	(\$4,667)	No				
281	NYD000809350	11.1	Off site	\$19,003	4	48	\$97.50	\$4,680	\$14,323	Yes				
282	LAD000757286	10.7	On site	\$12	4	48	\$97.50	\$4,680	(\$4,668)	No				
283	NJD002385730	10.4	On site	\$14,937	4	48	\$97.50	\$4,680	\$10,257	Yes				
284	TXD062128004	10.3	Off site	\$1,491	4	48	\$97.50	\$4,680	(\$3,189)	No				
285	OHD000816629	10.3	Off site	\$16,315	4	48	\$97.50	\$4,680	\$11,635	Yes	Yes	\$11,635	10.3	0.8
286	NYD980592497	10.0	On site	\$11	4	48	\$97.50	\$4,680	(\$4,669)	No				
287	TND982109142	9.22	On site	\$97	4	48	\$97.50	\$4,680	(\$4,583)	No				
288	CTD000604488	9.06	Off site	\$16,269	4	48	\$97.50	\$4,680	\$11,589	Yes	Yes	\$11,589	9.1	0.7
289	CTD000844332	9.02	Off site	\$16,270	4	48	\$97.50	\$4,680	\$11,590	Yes				
290	TXD077603371	8.51	Off site	\$12,675	4	48	\$97.50	\$4,680	\$7,995	Yes				
291	CTD001139617	8.04	Off site	\$16,232	4	48	\$97.50	\$4,680	\$11,552	Yes				
292	NYD002211324	7.82	Off site	\$16,224	4	48	\$97.50	\$4,680	\$11,544	Yes				
293	CAD000627273	7.76	Off site	\$17,143	4	48	\$97.50	\$4,680	\$12,463	Yes				
294	FLD980729610	7.72	Off site	\$2,051	4	48	\$97.50	\$4,680	(\$2,629)	No	No			
295	NYD980592497	7.61	On site	\$9	4	48	\$97.50	\$4,680	(\$4,671)	No				

296	PAD001887579	6.74	Off site	\$16,182	4	48	\$97.50	\$4,680	\$11,502	Yes				
297	CAD049904766	6.66	Off site	\$16,179	4	48	\$97.50	\$4,680	\$11,499	Yes				
298	NYD980592497	6.31	On site	\$7	4	48	\$97.50	\$4,680	(\$4,673)	No				
299	KSD007246846	5.88	Off site	\$23,864	4	48	\$97.50	\$4,680	\$19,184	Yes	Yes	\$19,184	5.9	0.5
300	NYD980592497	5.66	On site	\$6	4	48	\$97.50	\$4,680	(\$4,674)	No				
301	MED985467935	5.65	Off site	\$16,138	4	48	\$97.50	\$4,680	\$11,458	Yes	Yes	\$11,458	5.7	0.5
302	NYD002211324	5.25	Off site	\$16,123	4	48	\$97.50	\$4,680	\$11,443	Yes	Yes	\$11,443	5.3	0.4
303	MSD054179403	5.20	On site	\$555	4	48	\$97.50	\$4,680	(\$4,125)	No				
304	NYD000098558	5.14	Off site	\$16,120	4	48	\$97.50	\$4,680	\$11,440	Yes				
305	PAD067098822	5.05	Off site	\$16,117	4	48	\$97.50	\$4,680	\$11,437	Yes				
306	VID068318146	4.80	Off site	\$16,107	4	48	\$97.50	\$4,680	\$11,427	Yes				
307	UTD001705029	4.73	On site	\$5	4	48	\$97.50	\$4,680	(\$4,675)	No				
308	OHD066060609	4.64	Off site	\$16,099	4	48	\$97.50	\$4,680	\$11,419	Yes	Yes	\$11,419	4.6	0.4
309	ILD000608471	4.40	Off site	\$16,090	4	48	\$97.50	\$4,680	\$11,410	Yes	Yes	\$11,410	4.4	0.4
310	IND000646943	4.26	Off site	\$23,802	4	48	\$97.50	\$4,680	\$19,122	Yes	Yes	\$19,122	4.3	0.3
311	NYD980592497	4.24	On site	\$3	4	48	\$97.50	\$4,680	(\$4,677)	No	No			
312	OHD052324290	4.16	Off site	\$1,328	4	48	\$97.50	\$4,680	(\$3,352)	No				
313	OHD980681571	4.15	Off site	\$16,082	4	48	\$97.50	\$4,680	\$11,402	Yes				
314	OHD066060609	4.11	Off site	\$16,079	4	48	\$97.50	\$4,680	\$11,399	Yes	Yes	\$11,399	4.1	0.3
315	MID000820381	3.82	On site	\$50	4	48	\$97.50	\$4,680	(\$4,630)	No				
316	NYD003930849	3.36	On site	\$4	4	48	\$97.50	\$4,680	(\$4,676)	No				
317	NYD980592497	3.21	On site	\$4	4	48	\$97.50	\$4,680	(\$4,676)	No				
318	ILD000608471	3.00	Off site	\$16,037	4	48	\$97.50	\$4,680	\$11,357	Yes				
319	ILD000608471	2.88	Off site	\$16,033	4	48	\$97.50	\$4,680	\$11,353	Yes				
320	NYD080480734	2.86	Off site	\$16,032	4	48	\$97.50	\$4,680	\$11,352	Yes				
321	ILD000608471	2.76	Off site	\$16,028	4	48	\$97.50	\$4,680	\$11,348	Yes				
322	IND000646943	2.65	Off site	\$7,453	4	48	\$97.50	\$4,680	\$2,773	Yes	Yes	\$2,773	2.7	0.2
323	CT5000001107	2.52	Off site	\$23,736	4	48	\$97.50	\$4,680	\$19,056	Yes				
324	FLD981474802	2.40	Off site	\$1,587	4	48	\$97.50	\$4,680	(\$3,093)	No	No			
325	CTD001139617	2.28	Off site	\$16,010	4	48	\$97.50	\$4,680	\$11,330	Yes				
326	NYD980592497	2.09	On site	\$2	4	48	\$97.50	\$4,680	(\$4,678)	No				
327	OHD005046677	1.96	Off site	\$15,997	4	48	\$97.50	\$4,680	\$11,317	Yes				
328	NY0000926436	1.88	On site	\$2	4	48	\$97.50	\$4,680	(\$4,678)	No				
329	ORD099149445	1.88	Off site	\$7,425	4	48	\$97.50	\$4,680	\$2,745	Yes				

330	OHD980681571	1.83	Off site	\$7,423	4	48	\$97.50	\$4,680	\$2,743	Yes				
331	FLD981474802	1.73	Off site	\$15,988	4	48	\$97.50	\$4,680	\$11,308	Yes	Yes	\$11,308	1.73	0.14
332	OHD980681571	1.60	Off site	\$15,983	4	48	\$97.50	\$4,680	\$11,303	Yes				
333	OHD980681571	1.60	Off site	\$15,983	4	48	\$97.50	\$4,680	\$11,303	Yes				
334	ILD000608471	1.54	Off site	\$15,981	4	48	\$97.50	\$4,680	\$11,301	Yes				
335	NYD002211324	1.53	Off site	\$15,980	4	48	\$97.50	\$4,680	\$11,300	Yes				
336	NYD980592497	1.31	On site	\$1	4	48	\$97.50	\$4,680	(\$4,679)	No				
337	NYD980592497	1.29	On site	\$1	4	48	\$97.50	\$4,680	(\$4,679)	No				
338	OHD980681571	1.19	Off site	\$7,399	4	48	\$97.50	\$4,680	\$2,719	Yes				
339	CT5000001107	1.15	Off site	\$23,683	4	48	\$97.50	\$4,680	\$19,003	Yes				
340	ILD000608471	1.10	Off site	\$15,964	4	48	\$97.50	\$4,680	\$11,284	Yes				
341	MD6150004095	1.05	On site	\$1	4	48	\$97.50	\$4,680	(\$4,679)	No				
342	NYD980592497	0.92	On site	\$1	4	48	\$97.50	\$4,680	(\$4,679)	No				
343	WAD988478723	0.92	Off site	\$12,381	4	48	\$97.50	\$4,680	\$7,701	Yes				
344	NHD500015441	0.90	Off site	\$2,976	4	48	\$97.50	\$4,680	(\$1,704)	No				
345	MD6150004095	0.88	On site	\$1	4	48	\$97.50	\$4,680	(\$4,679)	No	No			
346	OHD980681571	0.88	Off site	\$15,955	4	48	\$97.50	\$4,680	\$11,275	Yes				
347	TXD050858182	0.83	Off site	\$23,671	4	48	\$97.50	\$4,680	\$18,991	Yes				
348	NYD053719894	0.83	Off site	\$15,953	4	48	\$97.50	\$4,680	\$11,273	Yes				
349	ILD005158274	0.77	Off site	\$15,951	4	48	\$97.50	\$4,680	\$11,271	Yes				
350	NYD980592497	0.68	On site	\$1	4	48	\$97.50	\$4,680	(\$4,679)	No				
351	NYD980592497	0.66	On site	\$1	4	48	\$97.50	\$4,680	(\$4,679)	No				
352	ILD000608471	0.66	Off site	\$15,947	4	48	\$97.50	\$4,680	\$11,267	Yes				
353	NYD080480734	0.60	Off site	\$15,944	4	48	\$97.50	\$4,680	\$11,264	Yes				
354	OHD980681571	0.50	Off site	\$15,940	4	48	\$97.50	\$4,680	\$11,260	Yes				
355	NYD002211324	0.49	Off site	\$15,940	4	48	\$97.50	\$4,680	\$11,260	Yes				
356	WAD009249863	0.48	Off site	\$7,372	4	48	\$97.50	\$4,680	\$2,692	Yes				
357	CTD001186212	0.46	Off site	\$15,939	4	48	\$97.50	\$4,680	\$11,259	Yes				
358	ALD000622464	0.46	Off site	\$15,939	4	48	\$97.50	\$4,680	\$11,259	Yes	Yes	\$11,259	0.46	0.04
359	OHD980681571	0.45	Off site	\$15,939	4	48	\$97.50	\$4,680	\$11,259	Yes				
360	ILD000608471	0.44	Off site	\$15,938	4	48	\$97.50	\$4,680	\$11,258	Yes				
361	NYD980592497	0.42	On site	\$0	4	48	\$97.50	\$4,680	(\$4,680)	No				
362	AKD009252230	0.41	Off site	\$7,369	4	48	\$97.50	\$4,680	\$2,689	Yes				
363	ORD009227398	0.31	Off site	\$7,366	4	48	\$97.50	\$4,680	\$2,686	Yes				

364	GAD980845077	0.30	Off site	\$15,933	4	48	\$97.50	\$4,680	\$11,253	Yes				
365	PAD003038056	0.30	Off site	\$23,650	4	48	\$97.50	\$4,680	\$18,970	Yes				
366	NYD980592497	0.29	On site	\$0	4	48	\$97.50	\$4,680	(\$4,680)	No	No			
367	CTD001149277	0.23	Off site	\$15,930	4	48	\$97.50	\$4,680	\$11,250	Yes				
368	GAD981224991	0.23	Off site	\$2,947	4	48	\$97.50	\$4,680	(\$1,733)	No				
369	PAD987271848	0.23	Off site	\$15,930	4	48	\$97.50	\$4,680	\$11,250	Yes				
370	ILD000608471	0.22	Off site	\$15,930	4	48	\$97.50	\$4,680	\$11,250	Yes	Yes	\$11,250	0.22	0.02
371	CT5000001107	0.21	Off site	\$23,647	4	48	\$97.50	\$4,680	\$18,967	Yes				
372	TXD050858182	0.20	Off site	\$23,646	4	48	\$97.50	\$4,680	\$18,966	Yes				
373	MID980683775	0.20	Off site	\$23,646	4	48	\$97.50	\$4,680	\$18,966	Yes	Yes	\$18,966	0.20	0.02
374	WA0000189431	0.19	Off site	\$7,361	4	48	\$97.50	\$4,680	\$2,681	Yes				
375	NYD002211324	0.18	Off site	\$15,928	4	48	\$97.50	\$4,680	\$11,248	Yes				
376	NYD980592497	0.17	On site	\$0	4	48	\$97.50	\$4,680	(\$4,680)	No				
377	CTD001169010	0.10	Off site	\$23,642	4	48	\$97.50	\$4,680	\$18,962	Yes				
378	NYD980592497	0.10	On site	\$0	4	48	\$97.50	\$4,680	(\$4,680)	No				
379	NYD980592497	0.08	On site	\$0	4	48	\$97.50	\$4,680	(\$4,680)	No				
380	NYD980592497	0.06	On site	\$0	4	48	\$97.50	\$4,680	(\$4,680)	No				
381	ILD000608471	0.04	Off site	\$15,923	4	48	\$97.50	\$4,680	\$11,243	Yes				
382	NYD980592497	0.02	On site	\$0	4	48	\$97.50	\$4,680	(\$4,680)	No				
383	NYD980592497	0.01	On site	\$0	4	48	\$97.50	\$4,680	(\$4,680)	No				
Column totals =		51,496,157		\$934,602,827		18,384		\$1,792,440	\$932,810,387	383	58	\$1,573,161	189,463	3,055
								Total if "Yes"=	\$933,192,347	279	49	84%		
Key cells for assigning monitoring assumptions =					4		\$97.50	Total if "No"=	(\$381,960)	104	9			
Number of facilities meeting "break-even" threshold =											20	80%		
Average savings per wastestream =												\$32,105	3,867	62

**“Headworks Exemption” for F005 Benzene & F005 2-Ethoxyethanol  
“Mass Balance” Demonstration Costs:**

**Microeconomic Break-even Analysis  
to Determine “Lower- Bound” Estimate of Potential Claimants and National Cost Savings  
By Off- Setting Potential Savings in Wastewater Treatment Costs,  
with the Cost of “Mass Balance Demonstration” in Lieu of “Direct Monitoring” Costs  
Source: Per-facility mass balance demonstration cost assumption from the “Information Collection Request”**

					\$1,444	<Avg mass balance demo cost per facility per year					
Waste stream item	EPA ID	1997 aqueous spent solvent managed (tons/year)	Onsite/ Offsite Manage-ment	Potential annual cost savings for headworks exemption	Mass balance demonstration annual cost (\$/year)	Potential annual cost savings net direct monitoring cost	Achieve minimum breakeven with on-site direct monitoring costs?	Waste streams with known benzene or 2ethoxy-ethanol	Potential annual cost savings if "Yes" for benzene or 2ethoxy-ethanol wastes	Annual tons aqueous spent solvent waste water affected	Annual tons spent solvent waste water sludge affected
1	TND003376928	42,712,496	On site	\$891,119,466	\$1,444	\$891,118,022	Yes				
2	PAD003043353	2,485,320	On site	\$695,824	\$1,444	\$694,380	Yes				
3	NYD003930849	717,097	On site	\$267,691	\$1,444	\$266,247	Yes				
4	NYR000030726	583,820	On site	\$12,130,722	\$1,444	\$12,129,278	Yes				
5	NYD059385120	557,330	On site	\$624,151	\$1,444	\$622,707	Yes				
6	NYD002211324	498,170	On site	\$557,898	\$1,444	\$556,454	Yes				
7	IND000806935	443,616	On site	\$496,803	\$1,444	\$495,359	Yes				
8	MAD001402320	371,026	On site	\$415,510	\$1,444	\$414,066	Yes				
9	ALD079109013	343,704	On site	\$6,778,619	\$1,444	\$6,777,175	Yes				
10	GAD039046800	303,995	On site	\$340,443	\$1,444	\$338,999	Yes				
11	PAD043882323	208,333	On site	\$233,311	\$1,444	\$231,867	Yes				
12	CAD093365435	207,042	On site	\$4,097,327	\$1,444	\$4,095,883	Yes				
13	LA4800014587	206,023	On site	\$230,724	\$1,444	\$229,280	Yes				
14	CA1800090010	154,953	On site	\$3,075,354	\$1,444	\$3,073,910	Yes				
15	IND006050967	150,182	On site	\$121,218	\$1,444	\$119,774	Yes	Yes	\$119,774	150,182	0
16	MAD058060476	129,000	On site	\$144,466	\$1,444	\$143,022	Yes				
17	IND006050967	124,053	On site	\$138,926	\$1,444	\$137,482	Yes				
18	NYD980592497	105,064	On site	\$117,661	\$1,444	\$116,217	Yes				
19	ORD009023466	101,312	On site	\$113,459	\$1,444	\$112,015	Yes				
20	NYD980592497	93,607	On site	\$104,830	\$1,444	\$103,386	Yes				

21	CAD093365435	88,291	On site	\$1,836,974	\$1,444	\$1,835,530	Yes				
22	NCD003217437	75,063	On site	\$84,062	\$1,444	\$82,618	Yes				
23	MAD001923408	74,854	On site	\$33,919	\$1,444	\$32,475	Yes				
24	NYD002220804	65,291	On site	\$1,355,779	\$1,444	\$1,354,335	Yes				
25	NYD003930849	55,311	On site	\$61,942	\$1,444	\$60,498	Yes				
26	NCD051330280	51,782	On site	\$57,991	\$1,444	\$56,547	Yes				
27	MAD000846493	47,726	On site	\$963,333	\$1,444	\$961,889	Yes				
28	MAD001033190	45,377	On site	\$50,817	\$1,444	\$49,373	Yes				
29	OKD079986568	37,654	On site	\$42,168	\$1,444	\$40,724	Yes				
30	COD076470525	31,097	On site	\$648,560	\$1,444	\$647,116	Yes	Yes	\$647,116	31,097	2,545
31	MAD062163191	29,372	On site	\$32,894	\$1,444	\$31,450	Yes				
32	NYD002211324	28,298	On site	\$31,691	\$1,444	\$30,247	Yes				
33	NYD084006741	27,443	On site	\$544,577	\$1,444	\$543,133	Yes				
34	NYD980592497	23,803	On site	\$26,657	\$1,444	\$25,213	Yes				
35	NJD002385730	23,656	On site	\$504,473	\$1,444	\$503,029	Yes				
36	NYD980592497	22,031	On site	\$24,672	\$1,444	\$23,228	Yes				
37	VAD023741705	19,650	On site	\$402,914	\$1,444	\$401,470	Yes				
38	NYD980592497	16,824	On site	\$18,841	\$1,444	\$17,397	Yes				
39	NYD980592497	15,494	On site	\$17,352	\$1,444	\$15,908	Yes				
40	KSD007482011	15,072	On site	\$16,879	\$1,444	\$15,435	Yes				
41	MND000819268	15,007	On site	\$311,813	\$1,444	\$310,369	Yes				
42	PAD041399403	14,554	On site	\$16,299	\$1,444	\$14,855	Yes				
43	FL6170024412	7,503	On site	\$8,402	\$1,444	\$6,958	Yes				
44	ALD003297116	6,839	On site	\$166,224	\$1,444	\$164,780	Yes				
45	NYD986954147	6,713	On site	\$7,518	\$1,444	\$6,074	Yes				
46	NYD980592497	6,365	On site	\$7,129	\$1,444	\$5,685	Yes				
47	FLD046771952	5,930	On site	\$6,641	\$1,444	\$5,197	Yes				
48	OKD000632737	5,801	On site	\$6,496	\$1,444	\$5,052	Yes				
49	NYD041292509	5,472	On site	\$6,128	\$1,444	\$4,684	Yes				
50	VAD988170445	5,375	On site	\$132,879	\$1,444	\$131,435	Yes				
51	NYD002100352	4,966	On site	\$114,815	\$1,444	\$113,371	Yes				

52	NYD059385120	4,863	On site	\$5,446	\$1,444	\$4,002	Yes				
53	NYD980592497	4,497	On site	\$5,037	\$1,444	\$3,593	Yes				
54	NYD980592497	4,494	On site	\$5,032	\$1,444	\$3,588	Yes				
55	NYD980592497	4,492	On site	\$5,030	\$1,444	\$3,586	Yes				
56	WAR000008979	4,313	On site	\$111,606	\$1,444	\$110,162	Yes				
57	NYD980592497	3,671	On site	\$4,111	\$1,444	\$2,667	Yes				
58	NYD980592497	3,435	On site	\$3,846	\$1,444	\$2,402	Yes				
59	NYD980592497	3,404	On site	\$3,812	\$1,444	\$2,368	Yes				
60	COD007068646	3,381	On site	\$3,786	\$1,444	\$2,342	Yes				
61	TXD981512122	3,176	On site	\$81,886	\$1,444	\$80,442	Yes				
62	UTD009081357	3,048	On site	\$3,414	\$1,444	\$1,970	Yes				
63	COD980952097	2,998	On site	\$76,212	\$1,444	\$74,768	Yes				
64	FL6170024412	2,850	On site	\$3,192	\$1,444	\$1,748	Yes				
65	CAD000030494	2,848	On site	\$81,332	\$1,444	\$79,888	Yes				
66	CA1800090010	2,810	On site	\$72,950	\$1,444	\$71,506	Yes				
67	TXD077603371	2,801	Off site	\$98,287	\$1,444	\$96,843	Yes				
68	NYD980592497	2,671	On site	\$2,991	\$1,444	\$1,547	Yes				
69	NYD000824482	2,096	On site	\$2,347	\$1,444	\$903	Yes				
70	NED981723513	2,060	Off site	\$124,748	\$1,444	\$123,304	Yes	Yes	\$123,304	2,060	169
71	FLD004073177	1,969	On site	\$2,205	\$1,444	\$761	Yes				
72	GAD061022216	1,892	On site	\$61,550	\$1,444	\$60,106	Yes				
73	OHD093945293	1,699	Off site	\$59,744	\$1,444	\$58,300	Yes	Yes	\$58,300	1,699	0
74	NYD980592497	1,674	On site	\$1,874	\$1,444	\$430	Yes				
75	WA7890008967	1,650	On site	\$45,239	\$1,444	\$43,795	Yes				
76	NYD980592497	1,591	On site	\$1,782	\$1,444	\$338	Yes				
77	CA7170090016	1,576	On site	\$1,272	\$1,444	(\$172)	No	No			
78	NYD980592497	1,539	On site	\$1,723	\$1,444	\$279	Yes				
79	UTD001705029	1,522	On site	\$1,705	\$1,444	\$261	Yes				
80	NJD002385730	1,501	On site	\$45,833	\$1,444	\$44,389	Yes				
81	NYD980592497	1,419	On site	\$1,146	\$1,444	(\$298)	No	No			
82	TXD077603371	1,293	Off site	\$84,213	\$1,444	\$82,769	Yes				

83	NYD003930849	1,266	On site	\$1,418	\$1,444	(\$26)	No				
84	LAD985218742	1,251	On site	\$1,401	\$1,444	(\$43)	No				
85	MID000820381	1,202	On site	\$1,346	\$1,444	(\$98)	No				
86	NYD980592497	1,084	On site	\$1,213	\$1,444	(\$231)	No				
87	COD000694869	1,001	Off site	\$75,836	\$1,444	\$74,392	Yes	Yes	\$74,392	1,001	82
88	OKD000758599	913	On site	\$35,299	\$1,444	\$33,855	Yes				
89	WID000808824	878	Off site	\$61,881	\$1,444	\$60,437	Yes				
90	WID990829475	878	Off site	\$69,549	\$1,444	\$68,105	Yes				
91	NYD980592497	848	On site	\$949	\$1,444	(\$495)	No				
92	CAD000030494	804	On site	\$27,756	\$1,444	\$26,312	Yes				
93	WID000808824	746	Off site	\$54,789	\$1,444	\$53,345	Yes				
94	GAD003324985	727	On site	\$814	\$1,444	(\$630)	No				
95	NYD981561962	705	Off site	\$52,614	\$1,444	\$51,170	Yes				
96	TXD052649027	670	Off site	\$24,310	\$1,444	\$22,866	Yes				
97	PAD030069140	616	Off site	\$47,789	\$1,444	\$46,345	Yes				
98	OHD001926740	590	Off site	\$46,415	\$1,444	\$44,971	Yes	Yes	\$44,971	590	48
99	KYD053348108	580	On site	\$17,538	\$1,444	\$16,094	Yes				
100	CAD008302903	563	Off site	\$44,949	\$1,444	\$43,505	Yes				
101	FL6170024412	552	On site	\$618	\$1,444	(\$826)	No				
102	NJD056356066	550	Off site	\$35,073	\$1,444	\$33,629	Yes				
103	OHD980681571	528	Off site	\$43,062	\$1,444	\$41,618	Yes				
104	TXD981898760	499	Off site	\$43,642	\$1,444	\$42,198	Yes				
105	NYD980592497	495	On site	\$555	\$1,444	(\$889)	No				
106	IND000646943	495	Off site	\$32,047	\$1,444	\$30,603	Yes	Yes	\$30,603	495	41
107	AZD009015389	487	Off site	\$31,775	\$1,444	\$30,331	Yes				
108	WVD988776852	476	Off site	\$17,450	\$1,444	\$16,006	Yes				
109	NYD980592497	473	On site	\$530	\$1,444	(\$914)	No				
110	UTD001705029	462	On site	\$1,700	\$1,444	\$256	Yes				
111	NYD003930849	455	On site	\$510	\$1,444	(\$934)	No				
112	NYD980592497	425	On site	\$476	\$1,444	(\$968)	No				
113	GAD003324985	422	On site	\$473	\$1,444	(\$971)	No				

114	AZD009015389	421	Off site	\$15,470	\$1,444	\$14,026	Yes				
115	UTD001705029	362	Off site	\$13,387	\$1,444	\$11,943	Yes				
116	GAD033582461	362	On site	\$22,229	\$1,444	\$20,785	Yes				
117	WAR000008979	358	On site	\$29,836	\$1,444	\$28,392	Yes				
118	PAD030069140	353	Off site	\$33,681	\$1,444	\$32,237	Yes				
119	FL6170024412	348	On site	\$390	\$1,444	(\$1,054)	No				
120	ILD980613913	347	Off site	\$12,848	\$1,444	\$11,404	Yes				
121	OHD066060609	341	Off site	\$32,930	\$1,444	\$31,486	Yes	Yes	\$31,486	341	28
122	ILD005083316	334	Off site	\$32,689	\$1,444	\$31,245	Yes				
123	OHD980681571	332	Off site	\$32,555	\$1,444	\$31,111	Yes				
124	PRD090036021	295	On site	\$330	\$1,444	(\$1,114)	No				
125	WID990829475	288	Off site	\$37,883	\$1,444	\$36,439	Yes				
126	CTD064828726	284	On site	\$318	\$1,444	(\$1,126)	No				
127	OHD004182408	278	Off site	\$29,678	\$1,444	\$28,234	Yes				
128	OKD981909849	276	Off site	\$10,283	\$1,444	\$8,839	Yes				
129	MAD000844597	275	Off site	\$18,833	\$1,444	\$17,389	Yes				
130	WID990829475	260	Off site	\$36,395	\$1,444	\$34,951	Yes				
131	MAR000007955	259	Off site	\$31,017	\$1,444	\$29,573	Yes				
132	MAD980912323	256	Off site	\$36,163	\$1,444	\$34,719	Yes				
133	RID058065707	251	Off site	\$17,332	\$1,444	\$15,888	Yes				
134	OKD089761290	251	Off site	\$9,305	\$1,444	\$7,861	Yes	Yes	\$7,861	251	0
135	NYD980592497	248	On site	\$277	\$1,444	(\$1,167)	No				
136	IND000646943	242	Off site	\$35,373	\$1,444	\$33,929	Yes	Yes	\$33,929	242	20
137	NYD002081396	239	On site	\$22,072	\$1,444	\$20,628	Yes				
138	MND985694736	237	On site	\$16,042	\$1,444	\$14,598	Yes				
139	WAR000008979	223	On site	\$27,051	\$1,444	\$25,607	Yes				
140	MAD980912323	219	Off site	\$34,215	\$1,444	\$32,771	Yes				
141	IND085616837	200	Off site	\$25,444	\$1,444	\$24,000	Yes				
142	ILD980613913	190	Off site	\$24,918	\$1,444	\$23,474	Yes				
143	CTD001449784	186	Off site	\$24,709	\$1,444	\$23,265	Yes				
144	MAD001402320	186	Off site	\$24,700	\$1,444	\$23,256	Yes				

145	PAD980551964	183	Off site	\$13,047	\$1,444	\$11,603	Yes				
146	OHD004172565	183	Off site	\$24,480	\$1,444	\$23,036	Yes	Yes	\$23,036	183	15
147	NYD980592497	182	On site	\$204	\$1,444	(\$1,240)	No				
148	NYD980592497	181	On site	\$202	\$1,444	(\$1,242)	No				
149	FL6170024412	178	Off site	\$6,736	\$1,444	\$5,292	Yes				
150	NYD980592497	170	On site	\$190	\$1,444	(\$1,254)	No				
151	PAD067362327	161	Off site	\$23,358	\$1,444	\$21,914	Yes				
152	MAD000844597	151	Off site	\$10,982	\$1,444	\$9,538	Yes				
153	IND000646943	142	Off site	\$13,563	\$1,444	\$12,119	Yes	Yes	\$12,119	142	12
154	NYD980592497	141	On site	\$158	\$1,444	(\$1,286)	No				
155	NYD980592497	135	On site	\$151	\$1,444	(\$1,293)	No				
156	NYD980592497	133	On site	\$148	\$1,444	(\$1,296)	No				
157	CTD001840974	121	Off site	\$21,230	\$1,444	\$19,786	Yes				
158	IND000646943	118	Off site	\$12,315	\$1,444	\$10,871	Yes	Yes	\$10,871	118	10
159	ILD980613913	116	Off site	\$4,476	\$1,444	\$3,032	Yes				
160	PAD067098822	116	Off site	\$28,691	\$1,444	\$27,247	Yes				
161	IND000646943	116	Off site	\$12,214	\$1,444	\$10,770	Yes	Yes	\$10,770	116	9
162	MAD000604447	116	Off site	\$20,896	\$1,444	\$19,452	Yes	Yes	\$19,452	116	9
163	TXD077603371	115	Off site	\$4,403	\$1,444	\$2,959	Yes				
164	NYD980592497	110	On site	\$124	\$1,444	(\$1,320)	No				
165	KYD000770313	109	Off site	\$8,235	\$1,444	\$6,791	Yes				
166	NCD980842132	106	Off site	\$20,432	\$1,444	\$18,988	Yes				
167	NYD980592497	105	On site	\$118	\$1,444	(\$1,326)	No				
168	NYD980592497	103	On site	\$115	\$1,444	(\$1,329)	No				
169	COD160887741	100	On site	\$112	\$1,444	(\$1,332)	No				
170	IND000646943	100	Off site	\$11,397	\$1,444	\$9,953	Yes	Yes	\$9,953	100	8
171	ILD000608471	100	Off site	\$20,068	\$1,444	\$18,624	Yes				
172	MAD019371079	94	Off site	\$19,760	\$1,444	\$18,316	Yes				
173	VAD982362428	93	Off site	\$7,204	\$1,444	\$5,760	Yes				
174	ILD005083316	91	Off site	\$19,626	\$1,444	\$18,182	Yes				
175	TXD056542749	87	On site	\$24,241	\$1,444	\$22,797	Yes				

176	MAD980912323	85	Off site	\$6,661	\$1,444	\$5,217	Yes					
177	PAD002311884	82	Off site	\$19,141	\$1,444	\$17,697	Yes					
178	NYD980592497	81	On site	\$91	\$1,444	(\$1,353)	No					
179	WID000808824	79	Off site	\$18,996	\$1,444	\$17,552	Yes					
180	CTD055310759	79	Off site	\$26,682	\$1,444	\$25,238	Yes					
181	MOD071987416	76	Off site	\$6,097	\$1,444	\$4,653	Yes					
182	TXD058276130	76	Off site	\$3,024	\$1,444	\$1,580	Yes					
183	GAD051010429	74	Off site	\$26,489	\$1,444	\$25,045	Yes					
184	NYD980592497	73	On site	\$82	\$1,444	(\$1,362)	No					
185	IND000646943	69	Off site	\$9,912	\$1,444	\$8,468	Yes	Yes	\$8,468	69	6	
186	IND000646943	67	Off site	\$9,867	\$1,444	\$8,423	Yes	Yes	\$8,423	67	6	
187	NYD980592497	63	On site	\$70	\$1,444	(\$1,374)	No					
188	TXD052649027	60	Off site	\$2,678	\$1,444	\$1,234	Yes					
189	CTD980668198	58	Off site	\$2,616	\$1,444	\$1,172	Yes					
190	NJD002147023	56	Off site	\$18,090	\$1,444	\$16,646	Yes					
191	CAD981375983	54	On site	\$23,564	\$1,444	\$22,120	Yes					
192	FLD982102295	52	On site	\$58	\$1,444	(\$1,386)	No					
193	CTD000604488	51	Off site	\$17,862	\$1,444	\$16,418	Yes	Yes	\$16,418	51	4	
194	NYD003930849	50.0	On site	\$56	\$1,444	(\$1,388)	No					
195	ALD983176520	50.0	On site	\$23,472	\$1,444	\$22,028	Yes					
196	NYD980592497	49.2	On site	\$55	\$1,444	(\$1,389)	No					
197	IND000646943	49.1	Off site	\$9,186	\$1,444	\$7,742	Yes	Yes	\$7,742	49	4	
198	OHD066060609	48.0	Off site	\$17,765	\$1,444	\$16,321	Yes	Yes	\$16,321	48	4	
199	NYD980592497	46.9	On site	\$53	\$1,444	(\$1,391)	No					
200	MAD001402320	46.8	Off site	\$17,734	\$1,444	\$16,290	Yes					
201	IND000646943	46.3	Off site	\$9,083	\$1,444	\$7,639	Yes	Yes	\$7,639	46	4	
202	LAD000757286	45.3	Off site	\$2,331	\$1,444	\$887	Yes					
203	ILD000608471	45.2	Off site	\$17,673	\$1,444	\$16,229	Yes					
204	MID083684290	45.1	Off site	\$25,383	\$1,444	\$23,939	Yes					
205	IND000646943	44.8	Off site	\$9,024	\$1,444	\$7,580	Yes	Yes	\$7,580	45	4	
206	RID058065707	44.5	Off site	\$4,374	\$1,444	\$2,930	Yes					

207	IND000646943	43.7	Off site	\$8,999	\$1,444	\$7,555	Yes					
208	ILD000608471	42.4	Off site	\$17,563	\$1,444	\$16,119	Yes					
209	NJD002147023	42.0	Off site	\$17,547	\$1,444	\$16,103	Yes					
210	PAD980550412	41.7	Off site	\$4,217	\$1,444	\$2,773	Yes					
211	OKD079986568	41.7	Off site	\$8,923	\$1,444	\$7,479	Yes					
212	CTD001840974	41.0	Off site	\$17,510	\$1,444	\$16,066	Yes					
213	CTD000604488	40.0	Off site	\$25,174	\$1,444	\$23,730	Yes	Yes	\$23,730	40	3	
214	ILD000608471	40.0	Off site	\$17,470	\$1,444	\$16,026	Yes					
215	NYD000707901	38.5	Off site	\$17,412	\$1,444	\$15,968	Yes					
216	KSD007246846	37.0	Off site	\$25,058	\$1,444	\$23,614	Yes	Yes	\$23,614	37	3	
217	OHD000816629	36.2	Off site	\$17,312	\$1,444	\$15,868	Yes	Yes	\$15,868	36	3	
218	TXD056542749	34.9	On site	\$23,159	\$1,444	\$21,715	Yes					
219	TXD056542749	34.9	On site	\$23,159	\$1,444	\$21,715	Yes					
220	CTD001449784	34.6	Off site	\$17,262	\$1,444	\$15,818	Yes					
221	TXD052649027	33.0	Off site	\$17,201	\$1,444	\$15,757	Yes					
222	IND000646943	33.0	Off site	\$24,906	\$1,444	\$23,462	Yes	Yes	\$23,462	33	3	
223	NYD003930849	32.0	On site	\$36	\$1,444	(\$1,408)	No					
224	MAR000007559	30.6	On site	\$34	\$1,444	(\$1,410)	No					
225	MAD053452637	27.1	Off site	\$16,962	\$1,444	\$15,518	Yes	Yes	\$15,518	27	2	
226	NYD980592497	26.8	On site	\$30	\$1,444	(\$1,414)	No					
227	NYD002067932	25.7	Off site	\$16,916	\$1,444	\$15,472	Yes					
228	OHD980681571	25.6	Off site	\$16,911	\$1,444	\$15,467	Yes					
229	KSD007246846	25.5	Off site	\$16,900	\$1,444	\$15,456	Yes	Yes	\$15,456	25	2	
230	VAD980831176	24.0	On site	\$6,624	\$1,444	\$5,180	Yes					
231	IND000646943	23.1	Off site	\$8,222	\$1,444	\$6,778	Yes					
232	ILD000608471	22.4	Off site	\$16,789	\$1,444	\$15,345	Yes					
233	ILD000608471	22.4	Off site	\$16,789	\$1,444	\$15,345	Yes					
234	ILD000608471	22.0	Off site	\$16,773	\$1,444	\$15,329	Yes					
235	MID083684290	21.9	Off site	\$24,485	\$1,444	\$23,041	Yes					
236	KSD980854285	21.8	Off site	\$8,172	\$1,444	\$6,728	Yes					
237	IND000646943	21.5	Off site	\$8,155	\$1,444	\$6,711	Yes	Yes	\$6,711	21	2	

238	MOD071987416	21.0	Off site	\$24,450	\$1,444	\$23,006	Yes				
239	NYD980592497	20.9	On site	\$23	\$1,444	(\$1,421)	No				
240	NJD002385730	20.9	On site	\$15,153	\$1,444	\$13,709	Yes				
241	ILD000608471	20.8	Off site	\$16,727	\$1,444	\$15,283	Yes				
242	ILD000608471	20.8	Off site	\$16,727	\$1,444	\$15,283	Yes				
243	FL6170024412	20.5	Off site	\$1,745	\$1,444	\$301	Yes				
244	MAR000007955	20.5	Off site	\$19,356	\$1,444	\$17,912	Yes				
245	MAD000604447	20.4	Off site	\$16,705	\$1,444	\$15,261	Yes	Yes	\$15,261	20.4	1.7
246	ILD000608471	20.4	Off site	\$16,711	\$1,444	\$15,267	Yes				
247	MAD019371079	20.2	Off site	\$16,704	\$1,444	\$15,260	Yes				
248	ILD000608471	20.0	Off site	\$16,696	\$1,444	\$15,252	Yes				
249	IND000646943	20.0	Off site	\$24,412	\$1,444	\$22,968	Yes				
250	CTD980668198	19.9	Off site	\$24,408	\$1,444	\$22,964	Yes				
251	ILD000608471	19.2	Off site	\$16,665	\$1,444	\$15,221	Yes				
252	ILD000608471	19.2	Off site	\$16,665	\$1,444	\$15,221	Yes				
253	VAR000004978	19.1	Off site	\$8,074	\$1,444	\$6,630	Yes				
254	ILD000608471	18.8	Off site	\$16,649	\$1,444	\$15,205	Yes				
255	ILD000608471	18.8	Off site	\$16,649	\$1,444	\$15,205	Yes				
256	OKD987083946	18.8	Off site	\$1,703	\$1,444	\$259	Yes				
257	CA7170090016	18.7	On site	\$15	\$1,444	(\$1,429)	No	No			
258	TXD056542749	17.4	On site	\$22,799	\$1,444	\$21,355	Yes				
259	IND000646943	17.2	Off site	\$24,298	\$1,444	\$22,854	Yes	Yes	\$22,854	17.2	1.4
260	DED053304770	17.1	On site	\$19	\$1,444	(\$1,425)	No				
261	FLD980729610	17.1	Off site	\$2,713	\$1,444	\$1,269	Yes	Yes	\$1,269	17.1	1.4
262	NJD006980924	17.0	On site	\$6,487	\$1,444	\$5,043	Yes				
263	UTD001705029	16.5	On site	\$19	\$1,444	(\$1,425)	No				
264	IND000646943	15.8	Off site	\$24,250	\$1,444	\$22,806	Yes				
265	PAD004498432	15.6	Off site	\$2,621	\$1,444	\$1,177	Yes				
266	IND085616837	14.9	Off site	\$16,497	\$1,444	\$15,053	Yes				
267	ILD000608471	14.8	Off site	\$16,494	\$1,444	\$15,050	Yes				
268	GAR000012336	14.8	Off site	\$7,911	\$1,444	\$6,467	Yes				

269	NCD986177061	14.4	Off site	\$16,480	\$1,444	\$15,036	Yes				
270	IND000646943	14.3	Off site	\$7,887	\$1,444	\$6,443	Yes	Yes	\$6,443	14.3	1.2
271	IND000646943	14.1	Off site	\$7,885	\$1,444	\$6,441	Yes				
272	ILD000608471	13.6	Off site	\$16,448	\$1,444	\$15,004	Yes				
273	TXD052649027	13.4	Off site	\$24,156	\$1,444	\$22,712	Yes				
274	IND000646943	13.3	Off site	\$7,854	\$1,444	\$6,410	Yes				
275	IND000646943	13.0	Off site	\$7,838	\$1,444	\$6,394	Yes	Yes	\$6,394	13.0	1.1
276	TXD052649027	12.6	Off site	\$16,409	\$1,444	\$14,965	Yes				
277	IND000646943	12.2	Off site	\$7,809	\$1,444	\$6,365	Yes	Yes	\$6,365	12.2	1.0
278	CAD982437089	12.1	Off site	\$24,106	\$1,444	\$22,662	Yes				
279	CTD000845198	11.9	Off site	\$24,099	\$1,444	\$22,655	Yes				
280	NYD980592497	11.7	On site	\$13	\$1,444	(\$1,431)	No				
281	NYD000809350	11.1	Off site	\$19,003	\$1,444	\$17,559	Yes				
282	LAD000757286	10.7	On site	\$12	\$1,444	(\$1,432)	No				
283	NJD002385730	10.4	On site	\$14,937	\$1,444	\$13,493	Yes				
284	TXD062128004	10.3	Off site	\$1,491	\$1,444	\$47	Yes				
285	OHD000816629	10.3	Off site	\$16,315	\$1,444	\$14,871	Yes	Yes	\$14,871	10.3	0.8
286	NYD980592497	10.0	On site	\$11	\$1,444	(\$1,433)	No				
287	TND982109142	9.22	On site	\$97	\$1,444	(\$1,347)	No				
288	CTD000604488	9.06	Off site	\$16,269	\$1,444	\$14,825	Yes	Yes	\$14,825	9.1	0.7
289	CTD000844332	9.02	Off site	\$16,270	\$1,444	\$14,826	Yes				
290	TXD077603371	8.51	Off site	\$12,675	\$1,444	\$11,231	Yes				
291	CTD001139617	8.04	Off site	\$16,232	\$1,444	\$14,788	Yes				
292	NYD002211324	7.82	Off site	\$16,224	\$1,444	\$14,780	Yes				
293	CAD000627273	7.76	Off site	\$17,143	\$1,444	\$15,699	Yes				
294	FLD980729610	7.72	Off site	\$2,051	\$1,444	\$607	Yes	Yes	\$607	7.7	0.6
295	NYD980592497	7.61	On site	\$9	\$1,444	(\$1,435)	No				
296	PAD001887579	6.74	Off site	\$16,182	\$1,444	\$14,738	Yes				
297	CAD049904766	6.66	Off site	\$16,179	\$1,444	\$14,735	Yes				
298	NYD980592497	6.31	On site	\$7	\$1,444	(\$1,437)	No				
299	KSD007246846	5.88	Off site	\$23,864	\$1,444	\$22,420	Yes	Yes	\$22,420	5.9	0.5

300	NYD980592497	5.66	On site	\$6	\$1,444	(\$1,438)	No				
301	MED985467935	5.65	Off site	\$16,138	\$1,444	\$14,694	Yes	Yes	\$14,694	5.7	0.5
302	NYD002211324	5.25	Off site	\$16,123	\$1,444	\$14,679	Yes	Yes	\$14,679	5.3	0.4
303	MSD054179403	5.20	On site	\$555	\$1,444	(\$889)	No				
304	NYD000098558	5.14	Off site	\$16,120	\$1,444	\$14,676	Yes				
305	PAD067098822	5.05	Off site	\$16,117	\$1,444	\$14,673	Yes				
306	WID068318146	4.80	Off site	\$16,107	\$1,444	\$14,663	Yes				
307	UTD001705029	4.73	On site	\$5	\$1,444	(\$1,439)	No				
308	OHD066060609	4.64	Off site	\$16,099	\$1,444	\$14,655	Yes	Yes	\$14,655	4.6	0.4
309	ILD000608471	4.40	Off site	\$16,090	\$1,444	\$14,646	Yes	Yes	\$14,646	4.4	0.4
310	IND000646943	4.26	Off site	\$23,802	\$1,444	\$22,358	Yes	Yes	\$22,358	4.3	0.3
311	NYD980592497	4.24	On site	\$3	\$1,444	(\$1,441)	No	No			
312	OHD052324290	4.16	Off site	\$1,328	\$1,444	(\$116)	No				
313	OHD980681571	4.15	Off site	\$16,082	\$1,444	\$14,638	Yes				
314	OHD066060609	4.11	Off site	\$16,079	\$1,444	\$14,635	Yes	Yes	\$14,635	4.1	0.3
315	MID000820381	3.82	On site	\$50	\$1,444	(\$1,394)	No				
316	NYD003930849	3.36	On site	\$4	\$1,444	(\$1,440)	No				
317	NYD980592497	3.21	On site	\$4	\$1,444	(\$1,440)	No				
318	ILD000608471	3.00	Off site	\$16,037	\$1,444	\$14,593	Yes				
319	ILD000608471	2.88	Off site	\$16,033	\$1,444	\$14,589	Yes				
320	NYD080480734	2.86	Off site	\$16,032	\$1,444	\$14,588	Yes				
321	ILD000608471	2.76	Off site	\$16,028	\$1,444	\$14,584	Yes				
322	IND000646943	2.65	Off site	\$7,453	\$1,444	\$6,009	Yes	Yes	\$6,009	2.7	0.2
323	CT5000001107	2.52	Off site	\$23,736	\$1,444	\$22,292	Yes				
324	FLD981474802	2.40	Off site	\$1,587	\$1,444	\$143	Yes	Yes	\$143	2.4	0.2
325	CTD001139617	2.28	Off site	\$16,010	\$1,444	\$14,566	Yes				
326	NYD980592497	2.09	On site	\$2	\$1,444	(\$1,442)	No				
327	OHD005046677	1.96	Off site	\$15,997	\$1,444	\$14,553	Yes				
328	NY0000926436	1.88	On site	\$2	\$1,444	(\$1,442)	No				
329	ORD099149445	1.88	Off site	\$7,425	\$1,444	\$5,981	Yes				
330	OHD980681571	1.83	Off site	\$7,423	\$1,444	\$5,979	Yes				

331	FLD981474802	1.73	Off site	\$15,988	\$1,444	\$14,544	Yes	Yes	\$14,544	1.73	0.14
332	OHD980681571	1.60	Off site	\$15,983	\$1,444	\$14,539	Yes				
333	OHD980681571	1.60	Off site	\$15,983	\$1,444	\$14,539	Yes				
334	ILD000608471	1.54	Off site	\$15,981	\$1,444	\$14,537	Yes				
335	NYD002211324	1.53	Off site	\$15,980	\$1,444	\$14,536	Yes				
336	NYD980592497	1.31	On site	\$1	\$1,444	(\$1,443)	No				
337	NYD980592497	1.29	On site	\$1	\$1,444	(\$1,443)	No				
338	OHD980681571	1.19	Off site	\$7,399	\$1,444	\$5,955	Yes				
339	CT5000001107	1.15	Off site	\$23,683	\$1,444	\$22,239	Yes				
340	ILD000608471	1.10	Off site	\$15,964	\$1,444	\$14,520	Yes				
341	MD6150004095	1.05	On site	\$1	\$1,444	(\$1,443)	No				
342	NYD980592497	0.92	On site	\$1	\$1,444	(\$1,443)	No				
343	WAD988478723	0.92	Off site	\$12,381	\$1,444	\$10,937	Yes				
344	NHD500015441	0.90	Off site	\$2,976	\$1,444	\$1,532	Yes				
345	MD6150004095	0.88	On site	\$1	\$1,444	(\$1,443)	No	No			
346	OHD980681571	0.88	Off site	\$15,955	\$1,444	\$14,511	Yes				
347	TXD050858182	0.83	Off site	\$23,671	\$1,444	\$22,227	Yes				
348	NYD053719894	0.83	Off site	\$15,953	\$1,444	\$14,509	Yes				
349	ILD005158274	0.77	Off site	\$15,951	\$1,444	\$14,507	Yes				
350	NYD980592497	0.68	On site	\$1	\$1,444	(\$1,443)	No				
351	NYD980592497	0.66	On site	\$1	\$1,444	(\$1,443)	No				
352	ILD000608471	0.66	Off site	\$15,947	\$1,444	\$14,503	Yes				
353	NYD080480734	0.60	Off site	\$15,944	\$1,444	\$14,500	Yes				
354	OHD980681571	0.50	Off site	\$15,940	\$1,444	\$14,496	Yes				
355	NYD002211324	0.49	Off site	\$15,940	\$1,444	\$14,496	Yes				
356	WAD009249863	0.48	Off site	\$7,372	\$1,444	\$5,928	Yes				
357	CTD001186212	0.46	Off site	\$15,939	\$1,444	\$14,495	Yes				
358	ALD000622464	0.46	Off site	\$15,939	\$1,444	\$14,495	Yes	Yes	\$14,495	0.46	0.04
359	OHD980681571	0.45	Off site	\$15,939	\$1,444	\$14,495	Yes				
360	ILD000608471	0.44	Off site	\$15,938	\$1,444	\$14,494	Yes				
361	NYD980592497	0.42	On site	\$0	\$1,444	(\$1,444)	No				

362	AKD009252230	0.41	Off site	\$7,369	\$1,444	\$5,925	Yes				
363	ORD009227398	0.31	Off site	\$7,366	\$1,444	\$5,922	Yes				
364	GAD980845077	0.30	Off site	\$15,933	\$1,444	\$14,489	Yes				
365	PAD003038056	0.30	Off site	\$23,650	\$1,444	\$22,206	Yes				
366	NYD980592497	0.29	On site	\$0	\$1,444	(\$1,444)	No	No			
367	CTD001149277	0.23	Off site	\$15,930	\$1,444	\$14,486	Yes				
368	GAD981224991	0.23	Off site	\$2,947	\$1,444	\$1,503	Yes				
369	PAD987271848	0.23	Off site	\$15,930	\$1,444	\$14,486	Yes				
370	ILD000608471	0.22	Off site	\$15,930	\$1,444	\$14,486	Yes	Yes	\$14,486	0.22	0.02
371	CT5000001107	0.21	Off site	\$23,647	\$1,444	\$22,203	Yes				
372	TXD050858182	0.20	Off site	\$23,646	\$1,444	\$22,202	Yes				
373	MID980683775	0.20	Off site	\$23,646	\$1,444	\$22,202	Yes	Yes	\$22,202	0.20	0.02
374	WA0000189431	0.19	Off site	\$7,361	\$1,444	\$5,917	Yes				
375	NYD002211324	0.18	Off site	\$15,928	\$1,444	\$14,484	Yes				
376	NYD980592497	0.17	On site	\$0	\$1,444	(\$1,444)	No				
377	CTD001169010	0.10	Off site	\$23,642	\$1,444	\$22,198	Yes				
378	NYD980592497	0.10	On site	\$0	\$1,444	(\$1,444)	No				
379	NYD980592497	0.08	On site	\$0	\$1,444	(\$1,444)	No				
380	NYD980592497	0.06	On site	\$0	\$1,444	(\$1,444)	No				
381	ILD000608471	0.04	Off site	\$15,923	\$1,444	\$14,479	Yes				
382	NYD980592497	0.02	On site	\$0	\$1,444	(\$1,444)	No				
383	NYD980592497	0.01	On site	\$0	\$1,444	(\$1,444)	No				
Column totals =		51,496,157		\$934,602,827		\$934,049,775	383	58	\$1,733,743	189,490	3,057
					Total if "Yes"=	\$934,136,869	310	52	90%		
					Total if "No"=	(\$87,094)	73	6			
Number of facilities meeting "break-even" threshold =								22	88%		
Average savings per wastestream =									\$33,341	3,644	59

**Economic Impact Estimation Tables & Spreadsheets  
for  
Proposed Regulatory Revision #2:  
  
Scrubber Wastewaters from Combustion  
of RCRA Hazardous Waste  
F001 to F005 Spent Solvents**

**Scrubber Wastewaters Generated from Combustion of RCRA Hazardous Wastes**  
**List of Facilities & Annual Quantities**

Data source #1: Based on July 2002 list of 73 facilities (company names & locations) provided by USEPA Office of Solid Waste (HWMMD-WTB); See “Notice of Data Availability” (NODA) in the Federal Register, Vol. 67, Nr. 127, 02 July 2002, pp.44452-44460; the data for the NODA are at:  
<http://www.epa.gov/epaoswer/hazwaste/combust/ph2noda1/page2-3.htm>

Data source #2: Scrubber water sources, physical form, annual quantities generated, treatment method, and RCRA wastecodes from the USEPA Office of Solid Waste 1997 “Biennial Reporting System” (BRS) database for RCRA hazardous wastes; see the USEPA’s Envirofacts BRS database query webpage at:  
[http://www.epa.gov/enviro/html/brs/brs\\_query.html](http://www.epa.gov/enviro/html/brs/brs_query.html) (1997 BRS data year is most recent data year available for Envirofacts query)

Facility count	Waste stream count	EPAID	Facility Name	City	State	BRS database search criteria		1997 BRS scrubber wastewater tons/year	Scrubber water management		RCRA hazardous wastecodes carried by scrubber wastewaters (40 CFR)
						Source code	Physical form code		Onsite or Offsite	System code	
1	1	AL3210020027	Anniston Army Depot	Anniston	AL						
2	2	ALD001221902	CIBA-Geigy Corporation	McIntosh	AL	A78	B115	345,329	On	M136	F001, F002, F003, F004, F005
	3					A78	B115	83,773	On	M136	F001, F002, F003, F004, F005
3	4	ARD069748192	ENSCO Inc.	El Dorado	AR						
4	5	ARD089234884	Arkansas Eastman	Batesville	AR						
5	6	CAD076528678	The Dow Chemical Company	Pittsburg	CA						
6	7	DED003930807	Dupont	Wilmington	DE						
7	8	GAD981237118	Monsanto (Nutrasweet Kelco Co.)	Augusta	GA						
8	9	IND000810861	Amoco Oil Co.	Whiting	IN	A74	B115	688,693	On	M123	K048, K051
9	10	IND006050967	Eli Lilly And Company	Shadeland	IN	A78	B115	275,912	On	M136	D002, U002, U003, U154, U220
10	11	IND072040348	Eli Lilly And Company	Clinton	IN						
11	12	KYD006370159	Elf Atochem North America, Inc.	Calvert City	KY	A78	B110	13,722	On	M121	D002
12	13	KYD006373922	Elf Atochem	Carrollton	KY						
13	14	KYD088438817	LWD, Inc.	Calvert City	KY						
14	15	LAD001890367	Dupont Dow Elastomers	LaPlace	LA						
15	16	LAD003913449	Borden Chemicals and Plastics (BCP)	Geismar	LA						
16	17	LAD008086506	PPG Inc	Westlake (Lake Charles)	LA						
17	18	LAD008187080	Dow Chemical Co.	Plaquemine	LA	A74	B115	1,138,571	On	M136	F001, F002, F003, F005, K016, K019, K020, P022

	19					A74	B115	1,733,725	On	M136	K016, K019, U077, U080, U083, U210, U211
	20					A74	B115	1,138,571	On	M136	F001, F002, F003, F005, K016, K020, P022, U002, U019, U031
	21					A74	B115	218,807	On	M136	D002
	22					A74	B115	264,205	On	M136	U044, U045, U080, U211
	23					A74	B115	1,504,786	On	M136	F002, F003, F005, F025, K019, K020, U077
	24					A74	B115	9,846	On	M136	D028
18	25	LAD008213191	Rubicon, Inc	Geismar	LA	A78	B115	233,979	On	M134	D002, D018, D019, D021, D022, D027, D036, D039
19	26	LAD040776809	BASF Corporation	Geismer	LA						
20	27	LAD053783445	Novartis (CIBA-Geigy Corporation)	St. Gabriel	LA	A78	B109	10,424	On	M136	D002, D022
21	28	LAD057117434	Georgia Gulf Chemicals and Vinyls, LLC	Plaquemine	LA						
22	29	LAD092681824	Vulcan Materials Co.	Geismar	LA						
23	30	LAD980622104	Shell Oil Co	Norco	LA						
24	31	LAR00001833	Lyondell	Westlake	LA	A78	B109	5,245	On	M121	D002, D021
	32					A74	B115	218,923	On	M136	K027, K112, U037
25	33	MDD003071875	FMC Agricultural Chemical Group	Baltimore	MD						
26	34	MID000724724	Dow Chemical Co.	Midland	MI						
27	35	MID000820381	Pharmacia & Upjohn Co.	Kalamazoo	MI						
28	36	MND006172969	3M	Cottage Grove	MN						
29	37	MOD050226075	American Cyanamid	Hannibal	MO						
30	38	MOD056389828	Bayer (Miles, Mobay)	Kansas City	MO						
31	39	MOD9857988164	I C I Explosives USA Incorporated	Joplin	MO						
32	40	NCD047373766	Catalytica Phar (Burroughs Wellcome)	Greenville	NC						
33	41	NJ3210020704	US Army Armament R&D Command	Picatinny	NJ						
34	42	NJD001707944	Asahi Glass (ZENECA, ICI)	Bayonne	NJ						
35	43	NJD980753875	Ausimont (Pennwalt Corp)	Thorofare	NJ						
36	44	NYD000632372	Safety Kleen (BDT Inc, Laidlaw)	Clarence	NY	A74	B115	75	Off	M092	D002
37	45	NYD002080034	General Electric Co.	Waterford	NY	A78	B115	5,294,515	On	M136	F039
38	46	NYD002103216	Occidental (Durez)	Niagara Falls	NY						
39	47	NYD080469935	Thermalkem (Norlite)	Cohoes	NY						

40	48	NYD980592497	Eastman Kodak	Rochester	NY	A74	B115	786,590	On	M136	F001 to F012, F039, 16 x Pxxx, 120 x Uxxx
	49					A78	B101	1,591	On	M136	F005
41	50	OHD004304689	PPG Industries, Inc.	Circleville	OH	A78	B115	2,794	Off	M094	D009, D010, F002, F003, F005, P005, U190, U223
	51					A78	B115	44	On	M041	D009, D010, F002, F003, F005
42	52	OHD048415665	Ross Incineration Services	Grafton	OH	A74	B115	6,523	Off	M077	D004, D006, D007, D008, D010
43	53	OHD980613541	Waste Technologies Industries	East Liverpool	OH						
44	54	OR6213820917	USA Umatilla Chemical Depot	Hermiston	OR						
45	55	PAD980550412	Lonza (Smithkline)	Conshohocken	PA	A78	B115	13,680	On	M136	F002, F003, F005
46	56	PRD090021056	Squibb Manufacturing, Inc.	Humacao	PR	A74	B115	32,832	On	M081	F002
47	57	PRD090028101	Merck Sharp & Dohme Quimica	Barceloneta	PR	A74	B115	106,445	On	M135	F002, F003, F005, U220
48	58	PRD091024786	Eli Lilly And Company	Mayaguez	PR	A74	B115	23,014	On	M135	F002, F003, D022
49	59	TN0890090004	US Department Of Energy	Oak Ridge	TN						
50	60	TND003376928	Tennessee Eastman Co.	Kingsport	TN						
51	61	TND007024664	Velsicol Chemical Corporation	Memphis	TN						
52	62	TND982109142	Diversified Scientific Services, Inc.	Kingston	TN						
53	63	TT0570090011	Department Of The Army	Johnston Atoll	TT						
54	64	TXD000017756	Dow Chemical Co.	La Porte	TX						
55	65	TXD000461533	Union Carbide Corporation	Texas City	TX						
56	66	TXD000838896	Chemical Waste Management	Port Arthur	TX						
57	67	TXD007330202	Eastman Chemical Company	Longview	TX	A78	B102	159,696	On	M081	K009, K010
	68					A78	B102	32,996	On	M081 + M123	F001, F002, K009, K010
	69					A78	B110	13,186	On	M081 + M123	D002, K009, K010
	70					A33	B115	21,530	On	M081 + M123	D002
58	71	TXD008079212	Dupont	La Porte	TX						
59	72	TXD008079642	Dupont Sabrine River	Orange	TX						
60	73	TXD008092793	Dow Chemical Company	Freeport	TX	A75	B115	507,073	On	M077	F002, F024, F039, K020
	74					A75	B115	79,055	On	M121	F002, F024, F039, K020
	75					A75	B115	3,835	On	M141	F002, F024, F039, K020
61	76	TXD055141378	Safety Kleen (Rollins)	Deer Park	TX						

62	77	TXD078432457	Hoechst Celanese Corp.	Pasadena	TX						
63	78	TXD086981172	Fina Oil & Chemical Co.	La Porte	TX						
64	79	TXD981911209	Occidental Chemical VCM	Deer Park	TX						
65	80	TXD982286932	Occidental Chemical Corp.	Gregory	TX						
66	81	UT5210090002	Deseret Army Depot CAMDS	Tooele	UT	A78	B115	6,925	Off	M094	D004, D007, D008
	82					A78	B115	866	Off	M077	D004, D007, D008
	83					A78	B115	28	Off	M141	D004, D007, D008
	84					A78	B115	2,535	Off	M014	D004, D007, D008
	85					A78	B115	564	Off	M111	D004, D007, D008
	86					A78	B115	121	On	M122	D004, D007, D008
	87					A78	B115	275	On	M041	D004, D007, D008
67	88	UTD981552177	Safety Kleen (Aptus)	Aragonite	UT						
68	89	VA1210020730	Radford Army Ammunition Plant	Radford	VA						
69	90	VAD065385296	Honeywell (Allied Fibers)	Hopewell	VA						
70	91	WID990829475	Waste Research And Reclamation	Eau Claire	WI	A74	B115	46	Off	M091	F005
71	92	WVD004325353	Crompton Corp (OSI Specialties, Inc.)	Sisterville	WV	A78	B115	37	On	M081	D003
72	93	WVD004341491	Cytec Industries	Willow Island	WV	A78	B115	328,680	On	M081	F005, K002, K003, K005, K007
73	94	WVD056866312	Bayer (Miles, Inc.)	New Martinsville	WV	A78	B115	1,287	On	M051	F003
Column total =								15,311,349			
Average per wastestream =								340,252			
Median per wastestream =								21,530			

<b>Combustion "Scrubber Wastewater"</b> <b>Annual Quantities Generated As Basis For Estimating Potential Cost Savings for Proposed Headworks Exemption</b>												
Flow days/year (same assumption as spent solvent WW) >					260	Tons per truckload>		20	Gallons scrubber water to generate 1.0 ton wastewater sludge >			2,931
Facility count	Waste stream count	EPA_ID	1997 scrubber water generated (tons/year)	Gallon equivalent (assuming average 8.34 lbs/gallon)	Million gallons per day (mgd) equivalent	Gallons per minute (gpm) equivalent	Count of 55-gallon drum equivalents	Average offsite shipments/year (full tanker truckload equivalents)	RCRA BRS scrubber water management system code	Scrubber water treatment location	Scrubber Water Treatment Method (RCRA BRS Description)	Imputed scrubber water treatment sludge (tons/year)
1	1	AL3210020027										
2	2	ALD001221902	345,329	82,812,710	0.3185	221.19	1,505,686		M136	On	Direct discharge to surface water under NPDES	0.0
	3		83,773	20,089,448	0.0773	53.66	365,263		M136	On	Direct discharge to surface water under NPDES	0.0
3	4	ARD069748192										
4	5	ARD089234884										
5	6	CAD076528678										
6	7	DED003930807										
7	8	GAD981237118										
8	9	IND000810861	688,693	165,154,197	0.6352	441.12	3,002,804		M123	On	Settling/clarification only	56,354.3
9	10	IND006050967	275,912	66,165,947	0.2545	176.73	1,203,017		M136	On	Direct discharge to surface water under NPDES	0.0
10	11	IND072040348										
11	12	KYD006370159	13,722	3,290,647	0.0127	8.79	59,830		M121	On	Neutralization only	1,122.8
12	13	KYD006373922										
13	14	KYD088438817										
14	15	LAD001890367										
15	16	LAD003913449										
16	17	LAD008086506										
17	18	LAD008187080	1,138,571	273,038,609	1.0501	729.27	4,964,338		M136	On	Direct discharge to surface water under NPDES	0.0
	19		1,733,725	415,761,391	1.5991	1,110.47	7,559,298		M136	On	Direct discharge to surface water under NPDES	0.0
	20		1,138,571	273,038,609	1.0501	729.27	4,964,338		M136	On	Direct discharge to surface water under NPDES	0.0

	21		218,807	52,471,703	0.2018	140.15	954,031		M136	On	Direct discharge to surface water under NPDES	0.0
	22		264,205	63,358,513	0.2437	169.23	1,151,973		M136	On	Direct discharge to surface water under NPDES	0.0
	23		1,504,786	360,859,952	1.3879	963.84	6,561,090		M136	On	Direct discharge to surface water under NPDES	0.0
	24		9,846	2,361,151	0.0091	6.31	42,930		M136	On	Direct discharge to surface water under NPDES	0.0
18	25	LAD008213191	233,979	56,110,072	0.2158	149.87	1,020,183		M134	On	Deepwell/underground injection	0.0
19	26	LAD040776809										
20	27	LAD053783445	10,424	2,499,760	0.0096	6.68	45,450		M136	On	Direct discharge to surface water under NPDES	0.0
21	28	LAD057117434										
22	29	LAD092681824										
23	30	LAD980622104										
24	31	LAR00001833	5,245	1,257,794	0.0048	3.36	22,869		M121	On	Neutralization only	429.2
	32		218,923	52,499,520	0.2019	140.22	954,537		M136	On	Direct discharge to surface water under NPDES	0.0
25	33	MDD003071875										
26	34	MID000724724										
27	35	MID000820381										
28	36	MND006172969										
29	37	MOD050226075										
30	38	MOD056389828										
31	39	MOD9857988164										
32	40	NCD047373766										
33	41	NJ3210020704										
34	42	NJD001707944										
35	43	NJD980753875										
36	44	NYD000632372	75	17,986	0.0001	0.05	327	4	M092	Off	Chemical precipitation with carbon adsorption	6.1
37	45	NYD002080034	5,294,515	1,269,667,866	4.8833	3,391.21	23,084,870		M136	On	Direct discharge to surface water under NPDES	0.0
38	46	NYD002103216										

39	47	NYD080469935										
40	48	NYD980592497	786,590	188,630,695	0.7255	503.82	3,429,649		M136	On	Direct discharge to surface water under NPDES	0.0
	49		1,591	381,535	0.0015	1.02	6,937		M136	On	Direct discharge to surface water under NPDES	0.0
41	50	OHD004304689	2,794	670,000	0.0026	1.79	12,182	140	M094	Off	Other aqueous organic/inorganic treatment	228.6
	51		44	10,552	0.00004	0.03	192		M041	On	Incineration -- liquids	0.0
42	52	OHD048415665	6,523	1,564,269	0.0060	4.18	28,441	326	M077	Off	Aqueous inorganic chemical precipitation	533.8
43	53	OHD980613541										
44	54	OR6213820917										
45	55	PAD980550412	13,680	3,280,576	0.0126	8.76	59,647		M136	On	Direct discharge to surface water under NPDES	0.0
46	56	PRD090021056	32,832	7,873,381	0.0303	21.03	143,152		M081	On	Aqueous organic biological treatment	2,686.6
47	57	PRD090028101	106,445	25,526,379	0.0982	68.18	464,116		M135	On	Direct discharge to sewer/POTW	0.0
48	58	PRD091024786	23,014	5,518,945	0.0212	14.74	100,344		M135	On	Direct discharge to sewer/POTW	0.0
49	59	TN0890090004										
50	60	TND003376928										
51	61	TND007024664										
52	62	TND982109142										
53	63	TT0570090011										
54	64	TXD000017756										
55	65	TXD000461533										
56	66	TXD000838896										
57	67	TXD007330202	159,696	38,296,403	0.1473	102.29	696,298		M081	On	Aqueous organic biological treatment	13,067.6
	68		32,996	7,912,710	0.0304	21.13	143,867		M081 + M123	On	Biological treatment + Settling/clarification	2,700.0
	69		13,186	3,162,110	0.0122	8.45	57,493		M081 + M123	On	Biological treatment + Settling/clarification	1,079.0
	70		21,530	5,163,070	0.0199	13.79	93,874		M081 + M123	On	Biological treatment + Settling/clarification	1,761.8
58	71	TXD008079212										
59	72	TXD008079642										
60	73	TXD008092793	507,073	121,600,240	0.4677	324.79	2,210,913		M077	On	Aqueous inorganic chemical precipitation	41,492.7

	74		79,055	18,958,034	0.0729	50.64	344,692		M121	On	Neutralization only	6,468.9
	75		3,835	919,664	0.0035	2.46	16,721		M141	On	Transfer facility	313.8
61	76	TXD055141378										
62	77	TXD078432457										
63	78	TXD086981172										
64	79	TXD981911209										
65	80	TXD982286932										
66	81	UT5210090002	6,925	1,660,671	0.0064	4.44	30,194	346	M094	Off	Other aqueous organic & inorganic treatment	566.7
	82		866	207,674	0.0008	0.55	3,776	43	M077	Off	Aqueous inorganic chemical precipitation	70.9
	83		28	6,715	0.00003	0.02	122	1	M141	Off	Transfer facility	2.3
	84		2,535	607,914	0.0023	1.62	11,053	127	M014	Off	Other metals recovery (for reuse)	207.4
	85		564	135,252	0.0005	0.36	2,459	28	M111	Off	Stabilization/chemical fixation (cementitious)	46.2
	86		121	29,017	0.0001	0.08	528		M122	On	Evaporation only	9.9
	87		275	65,947	0.0003	0.18	1,199		M041	On	Incineration -- liquids	0.0
67	88	UTD981552177										
68	89	VA1210020730										
69	90	VAD065385296										
70	91	WID990829475	46	11,031	0.00004	0.03	201	2	M091	Off	Aqueous chemical precipitation with biological treatment	3.8
71	92	WVD004325353	37	8,873	0.00003	0.02	161		M081	On	Aqueous organic biological treatment	3.0
72	93	WVD004341491	328,680	78,820,144	0.3032	210.52	1,433,094		M081	On	Aqueous organic biological treatment	26,895.2
73	94	WVD056866312	1,287	308,633	0.0012	0.82	5,612		M051	On	Energy recovery -- liquids (reuse as fuel)	0.0
Column totals =			15,311,349	3,671,786,307	14.12	9,807	66,759,751					156,050
Subtotal if "On site" =			15,290,993	3,666,904,796	14.10	9,794	66,670,996					154,385
Subtotal if "Off site" =			20,356	4,881,511	0.02	13	88,755	1,018				1,666

**Explanatory Notes:**

(a) \* Wastewater:to:sludge generation ratio represents a median of 2.4% solid & organic matter in wastewaters, and a median 30.0% solid & organic matter in sludges (based on USEPA Office of Solid Waste 1996 "National Hazardous Waste Constituent Survey" database). In comparison, typical municipal wastewaters are 0.02% solid & organic matter, and typical municipal raw sludges are 4% solid & organic matter (source: Viessman & Hammer, 1985, p.572).

**Estimate of Potential Cost Savings**  
**for Proposed Revision to the RCRA Hazardous Waste Industrial Wastewater Mixtures “Headworks Exemption”**  
**to Include Scrubber Wastewaters**  
**Generated by Combustion of F001 to F005 Spent Solvent Wastes**

					A	B	C	D	E	F	G	H	I	J
Discount rate for annualizing capital costs>						3%		\$18	\$300	\$252	< Key unit cost factors*			
Facility count	Waste stream count	EPA_ID	1997 scrubber water generated (tons/year)	F001 to F005 spent solvent codes only?	Scrubber water management system capital cost**	Scrubber water management system capital cost** (annualized over 10 years)	Scrubber water management system annual O&M cost**	Annual trucking costs for offsite management* **	Annual RCRA manifest cost for offsite shipping	Scrubber water sludge management cost** if RCRA hazardous waste (\$ per year)	On-site + off-site total annual waste management cost (B+...+F)	Hypothetical annual cost for management as non-haz waste (in surface impound-ments)	Potential annual cost savings (G - H)	Annual tons scrubber water affected (tons/year)
1	1	AL3210020027												
2	2	ALD001221902	345,329	Yes	\$0	\$0	\$732,338			\$0	\$732,338	\$345,605	\$386,732	345,329
	3		83,773	Yes	\$0	\$0	\$177,657			\$0	\$177,657	\$83,840	\$93,817	83,773
3	4	ARD069748192												
4	5	ARD089234884												
5	6	CAD076528678												
6	7	DED003930807												
7	8	GAD981237118												
8	9	IND000810861	688,693	No										
9	10	IND006050967	275,912	No										
10	11	IND072040348												
11	12	KYD006370159	13,722	No										
12	13	KYD006373922												
13	14	KYD088438817												
14	15	LAD001890367												
15	16	LAD003913449												
16	17	LAD008086506												
17	18	LAD008187080	1,138,571	No										
	19		1,733,725	No										
	20		1,138,571	No										
	21		218,807	No										
	22		264,205	No										
	23		1,504,786	No										
	24		9,846	No										

18	25	LAD008213191	233,979	No										
19	26	LAD040776809												
20	27	LAD053783445	10,424	No										
21	28	LAD057117434												
22	29	LAD092681824												
23	30	LAD980622104												
24	31	LAR00001833	5,245	No										
	32		218,923	No										
25	33	MDD003071875												
26	34	MID000724724												
27	35	MID000820381												
28	36	MND006172969												
29	37	MOD050226075												
30	38	MOD056389828												
31	39	MOD9857988164												
32	40	NCD047373766												
33	41	NJ3210020704												
34	42	NJD001707944												
35	43	NJD980753875												
36	44	NYD000632372	75	No										
37	45	NYD002080034	5,294,515	No										
38	46	NYD002103216												
39	47	NYD080469935												
40	48	NYD980592497	786,590	No										
	49		1,591	Yes	\$0	\$0	\$3,374			\$0	\$3,374	\$1,592	\$1,782	1,591
41	50	OHD004304689	2,794	Yes	\$38,035	\$4,234	\$13,570	\$50,290	\$41,909	\$57,612	\$167,615	\$2,796	\$164,818	2,794
	51		44	Yes	\$0	\$0	\$15,400			\$0	\$15,400	\$44	\$15,356	44
42	52	OHD048415665	6,523	No										
43	53	OHD980613541												
44	54	OR6213820917												
45	55	PAD980550412	13,680	Yes	\$0	\$0	\$29,011			\$0	\$29,011	\$13,691	\$15,320	13,680
46	56	PRD090021056	32,832	Yes	\$295,572	\$32,905	\$57,689			\$677,016	\$767,610	\$32,858	\$734,752	32,832
47	57	PRD090028101	106,445	Yes	\$0	\$0	\$225,737			\$0	\$225,737	\$106,530	\$119,207	106,445
48	58	PRD091024786	23,014	Yes	\$0	\$0	\$48,806			\$0	\$48,806	\$23,032	\$25,773	23,014

49	59	TN0890090004												
50	60	TND003376928												
51	61	TND007024664												
52	62	TND982109142												
53	63	TT0570090011												
54	64	TXD000017756												
55	65	TXD000461533												
56	66	TXD000838896												
57	67	TXD007330202	159,696	No										
	68		32,996	No										
	69		13,186	No										
	70		21,530	No										
58	71	TXD008079212												
59	72	TXD008079642												
60	73	TXD008092793	507,073	No										
	74		79,055	No										
	75		3,835	No										
61	76	TXD055141378												
62	77	TXD078432457												
63	78	TXD086981172												
64	79	TXD981911209												
65	80	TXD982286932												
66	81	UT5210090002	6,925	No										
	82		866	No										
	83		28	No										
	84		2,535	No										
	85		564	No										
	86		121	No										
	87		275	No										
67	88	UTD981552177												
68	89	VA1210020730												
69	90	VAD065385296												
70	91	WID990829475	46	Yes	\$138,865	\$15,459	\$20,765	\$828	\$1,200	\$949	\$39,201	\$46	\$39,155	46
71	92	WVD004325353	37	No										

72	93	WVD004341491	328,680	No										
73	94	WVD056866312	1,287	Yes	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Column totals =			15,311,349	9 facilities	\$472,472	\$52,599	\$1,324,346	\$51,118	\$43,109	\$735,577	\$2,206,748	\$610,036	\$1,596,713	609,548
Number annual manifests =									142	"Count of potentially exempt wastestreams =				10
Average per wastestream =					\$42,952	\$4,782	\$120,395	\$17,039	\$14,370	\$66,871	\$200,613	\$55,458	\$145,156	60,955
Median per wastestream =					\$0	\$0	\$29,011	\$828	\$1,200	\$0	\$48,806	\$13,691	\$39,155	18,347

Explanatory Notes:	
(a)	* Key unit cost factors:
!	Waste trucking unit cost: <b>\$18/ton</b> represents the average incremental cost for trucking RCRA hazardous wastes, compared to the average cost of trucking non-hazardous materials, based on OSW triangulation of three data sources on trucking costs, based on average trucking one-way distance of 200 miles, which approximately represents the national average distance between RCRA hazardous waste generators, and RCRA-permitted hazardous waste treatment, storage, disposal, & recycling facilities (TSDRFs); see attached spreadsheet for data source and derivation of this unit cost factor.
!	RCRA manifest unit cost: <b>\$300/trip</b> represents average manifest paperwork cost per truck shipment over the entire chain-of-custody from waste generators to waste transporters to waste receivers to filing the manifest with state governments for recordkeeping (see attached spreadsheet for source and derivation of manifest unit cost).
!	Sludge management unit cost: <b>\$252/ton</b> represents an average unit cost based on a data sample of sludge management quantities and methods from the USEPA-OSW 1996 "National Hazardous Waste Constituent Survey" database, consisting of 27 sludge wastestreams (387,000 tons) managed by: (1) dewatering, (2) phase separation (filtration), (3) stabilization/chemical fixation, (4) incineration, (5) energy recovery, and (6) landfill (see attached spreadsheet for the sludge data sample).
(b)	** Wastewater system costs (capital & O&M) estimated using cost algorithms displayed in another spreadsheet attached to this report.
(c)	*** For facilities which generate less than four 20-ton full truckload equivalents of scrubber waters per year for offsite transport, minimum of four manifests per year assigned (40 CFR 262.34 for LQGs).

**“Headworks Exemption” for Scrubber Wastewaters Generated by F001 to F005 Spent Solvent Combustion Units  
“Direct Monitoring” Costs:**

**Microeconomic Break- even Analysis to Determine “Lower- Bound” Estimate of Potential Claimants and National Cost Savings  
By Off- Setting Potential Savings in Wastewater Treatment Costs, with the Cost of Direct Monitoring**

\* Source: wastewater treatment system headworks monitoring frequency adopted from

USEPA Office of Water, “Detailed Costing Document For The Centralized Waste Treatment Industry”, EPA- 821- R- 98- 016, Dec. 1998, Section 5.2.

**Note: Existing CWA monitoring requirements are mostly for effluent wastewaters rather than influent headworks wastewaters;  
consequently, direct monitoring costs are assumed incremental for compliance with the RCRA “headworks exemption”**

Facility count	Waste stream count	EPA ID	1997 scrubber water generated (tons/year)	Onsite/ Offsite Manage-ment	Potential annual cost savings for headworks exemption	Headworks organics WW monitoring frequency (NPDES samples per month)	Annual minimum samples	EPA method 1624 unit cost for volatile organics sample analysis (\$/sample)	Headworks on-site monitoring cost (\$/year)	Potential annual cost savings net direct monitoring cost	Achieve minimum breakeven with on-site direct monitoring costs?	Annual tons scrubber water affected	Annual tons scrubber water sludge affected
1	1	AL3210020027											
2	2	ALD001221902	345,329	On	\$386,732	4	48	\$97.50	\$4,680	\$382,052	Yes	345,329	0
	3		83,773	On	\$93,817	4	48	\$97.50	\$4,680	\$89,137	Yes	83,773	0
3	4	ARD069748192											
4	5	ARD089234884											
5	6	CAD076528678											
6	7	DED003930807											
7	8	GAD981237118											
8	9	IND000810861	688,693	On									
9	10	IND006050967	275,912	On									
10	11	IND072040348											
11	12	KYD006370159	13,722	On									
12	13	KYD006373922											
13	14	KYD088438817											
14	15	LAD001890367											
15	16	LAD003913449											
16	17	LAD008086506											
17	18	LAD008187080	1,138,571	On									
	19		1,733,725	On									
	20		1,138,571	On									
	21		218,807	On									
	22		264,205	On									
	23		1,504,786	On									
	24		9,846	On									
18	25	LAD008213191	233,979	On									
19	26	LAD040776809											
20	27	LAD053783445	10,424	On									
21	28	LAD057117434											

22	29	LAD092681824											
23	30	LAD980622104											
24	31	LAR00001833	5,245	On									
	32		218,923	On									
25	33	MDD003071875											
26	34	MID000724724											
27	35	MID000820381											
28	36	MND006172969											
29	37	MOD050226075											
30	38	MOD056389828											
31	39	MOD9857988164											
32	40												
33	41	NJ3210020704											
34	42	NJD001707944											
35	43	NJD980753875											
36	44	NYD000632372	75	Off									
37	45	NYD002080034	5,294,515	On									
38	46	NYD002103216											
39	47	NYD080469935											
40	48	NYD980592497	786,590	On									
	49		1,591	On	\$1,782	4	48	\$97.50	\$4,680	(\$2,898)	No		
41	50	OHD004304689	2,794	Off	\$164,818	4	48	\$97.50	\$4,680	\$160,138	Yes	2,794	229
	51		44	On	\$15,356	4	48	\$97.50	\$4,680	\$10,676	Yes	44	0
42	52	OHD048415665	6,523	Off									
43	53	OHD980613541											
44	54	OR6213820917											
45	55	PAD980550412	13,680	On	\$15,320	4	48	\$97.50	\$4,680	\$10,640	Yes	13,680	0
46	56	PRD090021056	32,832	On	\$734,752	4	48	\$97.50	\$4,680	\$730,072	Yes	32,832	2,687
47	57	PRD090028101	106,445	On	\$119,207	4	48	\$97.50	\$4,680	\$114,527	Yes	106,445	0
48	58	PRD091024786	23,014	On	\$25,773	4	48	\$97.50	\$4,680	\$21,093	Yes	23,014	0
49	59	TN0890090004											
50	60	TND003376928											
51	61	TND007024664											
52	62	TND982109142											
53	63	TT0570090011											
54	64	TXD000017756											
55	65	TXD000461533											
56	66	TXD000838896											
57	67	TXD007330202	159,696	On									
	68		32,996	On									
	69		13,186	On									
	70		21,530	On									
58	71	TXD008079212											

59	72	TXD008079642											
60	73	TXD008092793	507,073	On									
	74		79,055	On									
	75		3,835	On									
61	76	TXD055141378											
62	77	TXD078432457											
63	78	TXD086981172											
64	79	TXD981911209											
65	80	TXD982286932											
66	81	UT5210090002	6,925	Off									
	82		866	Off									
	83		28	Off									
	84		2,535	Off									
	85		564	Off									
	86		121	On									
	87		275	On									
67	88	UTD981552177											
68	89	VA1210020730											
69	90	VAD065385296											
70	91	WID990829475	46	Off	\$39,155	4	48	\$97.50	\$4,680	\$34,475	Yes	46	4
71	92	WVD004325353	37	On									
72	93	WVD004341491	328,680	On									
73	94	WVD056866312	1,287	On									
Column totals =			15,311,349		\$1,596,713		480		\$46,800	\$1,549,913	10	607,957	2,919
Total if "Yes"=										\$1,552,811	9	7 facilities	
Key cells for assigning monitoring assumptions =						4		\$97.50	Total if "No"=	(\$2,898)	1		
Average savings per wastestream =											\$172,535	67,551	324

**Proposed “Headworks Exemption” for Scrubber Wastewaters Generated by Combustion of F001 to F005 Spent Solvents  
“Mass Balance” Demonstration Costs:**

**Microeconomic Break-even Analysis to Determine “Lower- Bound” Estimate of Potential Claimants and National Cost Savings  
By Off- Setting Potential Savings in Scrubber Wastewater Treatment Costs,  
with the Cost of “Mass Balance Demonstration” in Lieu of “Direct Monitoring” Costs  
Source: Per-facility mass balance demonstration cost assumption from the “Information Collection Request”**

						<b>\$1,444</b>	<Avg cost/facility/year			
Facility count	Waste stream count	EPA ID	1997 scrubber water generated (tons/year)	Onsite/ Offsite Manage-ment	Potential annual cost savings for headworks exemption	Mass balance demon-stration annual cost (\$/year)	Potential annual cost savings net direct monitoring cost	Achieve minimum breakeven with on-site direct monitoring costs?	Annual tons scrubber water affected	Annual tons scrubber water sludge affected
1	1	AL3210020027								
2	2	ALD001221902	345,329	On	\$386,732	\$1,444	\$385,288	Yes	345,329	0
	3			On	\$93,817	\$1,444	\$92,373	Yes	83,773	0
3	4	ARD069748192								
4	5	ARD089234884								
5	6	CAD076528678								
6	7	DED003930807								
7	8	GAD981237118								
8	9	IND000810861	688,693	On						
9	10	IND006050967	275,912	On						
10	11	IND072040348								
11	12	KYD006370159	13,722	On						
12	13	KYD006373922								
13	14	KYD088438817								
14	15	LAD001890367								
15	16	LAD003913449								
16	17	LAD008086506								
17	18	LAD008187080	1,138,571	On						
	19		1,733,725	On						
	20		1,138,571	On						

	21		218,807	On						
	22		264,205	On						
	23		1,504,786	On						
	24		9,846	On						
18	25	LAD008213191	233,979	On						
19	26	LAD040776809								
20	27	LAD053783445	10,424	On						
21	28	LAD057117434								
22	29	LAD092681824								
23	30	LAD980622104								
24	31	LAR00001833	5,245	On						
	32		218,923	On						
25	33	MDD003071875								
26	34	MID000724724								
27	35	MID000820381								
28	36	MND006172969								
29	37	MOD050226075								
30	38	MOD056389828								
31	39	MOD9857988164								
32	40	NCD047373766								
33	41	NJ3210020704								
34	42	NJD001707944								
35	43	NJD980753875								
36	44	NYD000632372	75	Off						
37	45	NYD002080034	5,294,515	On						
38	46	NYD002103216								
39	47	NYD080469935								
40	48	NYD980592497	786,590	On						
	49		1,591	On	\$1,782	\$1,444	\$338	Yes	1,591	0
41	50	OHD004304689	2,794	Off	\$164,818	\$1,444	\$163,374	Yes	2,794	229

	51		44	On	\$15,356	\$1,444	\$13,912	Yes	44	0
42	52	OHD048415665	6,523	Off						
43	53	OHD980613541								
44	54	OR6213820917								
45	55	PAD980550412	13,680	On	\$15,320	\$1,444	\$13,876	Yes	13,680	0
46	56	PRD090021056	32,832	On	\$734,752	\$1,444	\$733,308	Yes	32,832	2,687
47	57	PRD090028101	106,445	On	\$119,207	\$1,444	\$117,763	Yes	106,445	0
48	58	PRD091024786	23,014	On	\$25,773	\$1,444	\$24,329	Yes	23,014	0
49	59	TN0890090004								
50	60	TND003376928								
51	61	TND007024664								
52	62	TND982109142								
53	63	TT0570090011								
54	64	TXD000017756								
55	65	TXD000461533								
56	66	TXD000838896								
57	67	TXD007330202	159,696	On						
	68		32,996	On						
	69		13,186	On						
	70		21,530	On						
58	71	TXD008079212								
59	72	TXD008079642								
60	73	TXD008092793	507,073	On						
	74		79,055	On						
	75		3,835	On						
61	76	TXD055141378								
62	77	TXD078432457								
63	78	TXD086981172								
64	79	TXD981911209								
65	80	TXD982286932								

66	81	UT5210090002	6,925	Off						
	82		866	Off						
	83		28	Off						
	84		2,535	Off						
	85		564	Off						
	86		121	On						
	87		275	On						
67	88	UTD981552177								
68	89	VA1210020730								
69	90	VAD065385296								
70	91	WID990829475	46	Off	\$39,155	\$1,444	\$37,711	Yes	46	4
71	92	WVD004325353	37	On						
72	93	WVD004341491	328,680	On						
73	94	WVD056866312	1,287	On						
Column totals =			15,227,576		\$1,596,713		\$1,582,273	10	609,548	2,919
Total if "Yes"=							\$1,582,273	10	8 facilities	
Total if "No"=							\$0	0		
Average savings per wastestream =							\$158,227	60,955	292	

## **Section IV.C**

### **Other Computation Tables**

Estimation of Potential Reduction in Annual Number of RCRA Hazardous Waste Manifests Associated with the Proposed Revisions to the RCRA Headworks Exemption for Hazardous Waste Mixtures					
Item	Proposed revision	Basis for estimating reduction in annual waste manifests	Implied waste fraction transported offsite (tons/year)	Estimated number of truck transport manifests potentially affected (annual reduction)	Average waste quantity per manifest (tons per truckload)
1	Headworks spent solvents	AS/WWT impact: 20 of 25 reference facilities transport 8,211 of 192,509 tons of spent solvent waste offsite (see Section III.A spreadsheets)	(8,211 tons) / (192,509 tons) = 4.3%	411 manifests	20 tons
		AS/OM: manifest reduction estimate based on AS/WWT above	43,000 tons x 4.3% = 1,849 tons	(1,849 tons) / (20 tons/manifest) = 93 manifests	Same as above
		OLS/ANYM: manifest reduction estimate based on AS/WWT above	19,000 tons x 4.3% = 817 tons	(817 tons) / (20 tons/manifest) = 41 manifests	Same as above
		Subtotal Revision #1 =	10,877 tons	545 manifests	
2	Headworks combustion scrubber waters	2 of 9 reference facilities transport 2,840 of 609,548 tons of combustion scrubber water offsite (see Section III.B spreadsheets)	(2,840 tons) / (609,548 tons) = 0.5%	142 manifests	20 tons
3	Headworks direct monitoring	Manifest reduction estimate based on regulatory revision #1 AS/WWT above.	780,000 tons x 4.3% = 33,540 tons	(33,540 tons) / (20 tons/manifest) = 1,677 manifests	Same as above
4, 5	Headworks de minimis	F- & K-listed wastes: see Section II	32 tons	71 incidents = 71 manifests	0.45 tons
		Non-manufacturing facilities: see Section II	570 tons	1,266 incidents = 1,266 manifests	0.45 tons
		Subtotal Revision #4 + #5 =	600 tons	1,337 manifests	
Totals =			47,900 tons/year	3,700 manifests/year	

## **Section V**

### **Unit Costs and Computation Factors Applied in this Study**

**Price Data on Industrial Cleaning & Degreasing Solvents**

A. Chemical Identity:				B. US Hazard Status:				C. US Average Price:					
Item	Solvent Chemical Name	Synonyms	CAS Number	RCRA hazardous wastecode* (40 CFR 261)	Toxic Air Pollutant (regulatory status**)			Price data source	Reference price basis	1994-99 US price range		Current US average price***	Current avg price standardized (\$/gal) ****
					UAT	HAP1	HAP2			Low	High		
1	Acetone	2-Propanone, Methyl ketone	67-64-1	F003, U002				A	\$/pound	\$0.39	\$0.42	\$0.42	\$3.28
								B	\$/pound			\$0.24	\$1.87
2	Benzene		71-43-2	D018, F005, U019	X	X	X	A	\$/gallon	\$0.82	\$1.55	\$0.75	\$0.75
3	n-butanol	n-Butyl alcohol	71-36-3	F003, U031				A	\$/pound	\$0.36	\$0.50	\$0.50	\$3.90
4	n-butyl acetate	Acetic acid n-butyl ester	123-86-4					A	\$/pound	\$0.39	\$0.61	\$0.54	\$4.21
								B	\$/metric ton			\$1,100	\$3.89
5	Carbon disulfide		75-15-0	F005, P022		X	X	A	\$/ton	\$465	\$485	\$485	\$1.89
6	Carbon tetrachloride	Tetrachloromethane	56-23-5	D019, F001, U211	X	X	X						
7	Chlorobenzene		108-90-7	D021, F002, U037		X	X	A	\$/pound	\$0.38	\$0.55	\$0.55	\$4.29
8	Chloroform	Trichloromethane	67-66-3	D022, U044	X	X	X	A	\$/pound	\$0.30	\$0.45	\$0.40	\$3.08
								B	\$/metric ton			\$550	\$1.95
9	o-Cresol		95-48-7	D023, F004		X	X						
10	Cresylic acid		1319-77-3	D026, F004, U052		X	X	A	\$/pound	\$0.45	\$0.80	\$0.60	\$4.68
11	Cyclohexane		110-82-7	U056				A	\$/gallon	\$1.05	\$1.44	\$1.44	\$1.44
12	Cyclohexanone	Cyclohexyl ketone, Anone	108-94-1	F003, U057				B	\$/pound			\$0.54	\$4.21
13	o-Dichlorobenzene	1,2-Dichlorobenzene	95-50-1	F002, U070				A	\$/pound	\$0.45	\$0.67	\$0.67	\$5.23
14	Diethylene glycol (DEG)		111-46-6					C	\$/pound	\$0.20	\$0.23	\$0.23	\$1.79
15	Dipropylene glycol (DIG)		25265-71-8					A	\$/pound	\$0.41	\$0.69	\$0.69	\$5.38
								B	\$/pound			\$0.65	\$5.07
16	Ethanol	Ethyl alcohol	64-17-5					A	\$/gallon	\$1.40	\$3.00	\$1.90	\$1.90
17	Ethyl acetate		141-78-6	F003, U112				A	\$/pound	\$0.37	\$0.59	\$0.59	\$4.60
								B	\$/pound			\$0.47	\$3.67
18	Ethylbenzene		100-41-4	F003				A	\$/pound	\$0.25	\$0.25	\$0.25	\$1.95
19	Ethyl ether		60-29-7	F003, U117									
20	Isobutanol	2-methyl-1-propanol, isobutyl alcohol	78-83-1	F005, U140				B	\$/metric ton			\$760	\$2.69

21	Isobutyl acetate		110-19-0					C	\$/pound			\$0.59	\$4.60
22	Isopropanol	Isopropyl alcohol, 2-propanol	67-63-0					A	\$/pound	\$0.20	\$0.34	\$0.34	\$2.65
								B	\$/metric ton			\$947	\$3.35
23	Isopropyl acetate		108-21-4					C	\$/pound			\$0.61	\$4.76
24	Methanol	Methyl alcohol	67-56-1	F003, U154		X	X	A	\$/gallon	\$0.28	\$1.55	\$1.55	\$1.55
								B	\$/metric ton			\$425	\$1.50
25	Methyl acetate		79-20-9										
26	Methyl chloride	Chloromethane	74-87-3	U045		X	X	A	\$/pound	\$0.28	\$0.39	\$0.39	\$3.00
27	Methyl ethyl ketone (MEK)	2-Butanone	78-93-3	D035, F005, U159		X	X	A	\$/pound	\$0.24	\$0.46	\$0.46	\$3.59
								B	\$/pound			\$0.43	\$3.35
28	Methyl isobutyl ketone (MIBK)	4-methyl-2-pentanone, Hexone	108-10-1	F003, U161		X	X	A	\$/pound	\$0.35	\$0.63	\$0.63	\$4.91
								B	\$/pound			\$0.57	\$4.45
29	Methylene chloride	Dichloromethane	75-09-2	F001, F002, U080		X	X	A	\$/pound	\$0.40	\$0.43	\$0.42	\$3.28
								B	\$/pound			\$0.27	\$2.11
30	Monoethylene glycol (MEG)	Ethylene glycol	107-21-1					C	\$/pound	\$0.15	\$0.26	\$0.26	\$2.03
31	Naphtha	Petroleum solvent; mineral spirits	8030-30-6										
32	Nitrobenzene		98-95-3	D036, F004, U169		X	X	A	\$/pound	\$0.30	\$0.34	\$0.34	\$2.65
33	2-Nitropropane		79-46-9	F005, U171		X	X						
34	n-propyl acetate		109-60-4					C	\$/pound			\$0.65	\$5.07
35	Pyridine		110-86-1	D038, F005, U196									
36	Toluene		108-88-3	F005, U220		X	X	A	\$/gallon	\$0.66	\$1.26	\$1.11	\$1.11
37	Perchloroethylene (PERC)	Tetrachloroethylene	127-18-4	D039, F001, F002, U210	X	X	X	A	\$/pound	\$0.32	\$0.35	\$0.35	\$2.73
								B	\$/metric ton			\$590	\$2.09
38	1,1,1-Trichloroethane (TCA)	Methyl chloroform	71-55-6	F001, F002, U226				B	\$/metric ton			\$1,750	\$6.19
39	Trichloroethylene (TCE)		79-01-6	D040, F001, F002, U228	X	X	X	A	\$/pound	\$0.60	\$0.65	\$0.60	\$4.68
								B	\$/pound			\$0.38	\$2.96
40	1,1,2-Trichloro-1,2,2-trifluoroethane	CFC-113	76-13-1	F002									
41	Triethylene glycol (TEG)		112-27-6					B	\$/metric ton			\$940	\$3.33
42	Turpentine	Gum or wood turpentine	9005-90-7					B	\$/metric ton			\$555	\$1.96
43	Xylene (mixed isomers o-	Dimethylbenzene	1330-20-7	F003, U239		X	X	B	\$/metric ton			\$495	\$1.75

		,m-,p-)											
Price Data Summary:				Count =	5	18	18	Count =				47	
								Minimum =				\$0.75	
								Maximum =				\$6.19	
								Standard deviation =				\$1.34	
								Low-high range midpoint =				\$3.47	
								Mean =				\$3.22	
								Median =				\$3.28	
								Skewness***** =				0.17	
								Kurtosis***** =				-1.00	
Explanatory Notes:													
(a)	The chemicals listed above do not represent all chemicals used historically or currently as solvents; there are reportedly at least 180 chemicals used as common industrial solvents. Source: Kirk-Othmer "Encyclopedia of Chemical Technology", 4th ed., John Wiley & Sons Inc., Vol.22: "Solvents, Industrial" Table 2, 1998, <a href="http://www.wiley.co.uk/products/subject/reference/kirk_index.html">http://www.wiley.co.uk/products/subject/reference/kirk_index.html</a>												
(b)	* RCRA wastecodes shown only as pertaining to chemicals in solvent applications; these chemicals may have other RCRA wastecodes associated with other industrial applications and sources.												
(c)	** Air pollution regulatory status: UAT = urban air toxic ( <a href="http://www.epa.gov/ttn/atw/urban/list33.html">http://www.epa.gov/ttn/atw/urban/list33.html</a> ). HAP = hazardous air pollutant: HAP1= 1990 original Clean Air Act listing <a href="http://www.epa.gov/ttn/atw/orig189.html">http://www.epa.gov/ttn/atw/orig189.html</a> HAP2= EPA 2001 revised listing <a href="http://www.epa.gov/ttn/atw/188polls.html">http://www.epa.gov/ttn/atw/188polls.html</a>												
(d)	*** "Current" price represents year 1999 or 2000 price (if data Source A below), or April 2001 price (if data Source B below).												
(e)	**** \$/pound and \$/ton prices standardized to \$/gallon common units, by applying an average pounds-per-gallon solvent specific gravity conversion factor = 7.8												
(f)	Price data sources: Source A = <a href="http://www.chemexpo.com">http://www.chemexpo.com</a> Source B = <a href="http://www.allchem.com/products/price.html">http://www.allchem.com/products/price.html</a> Source C = <a href="http://ceh.sric.sri.com">http://ceh.sric.sri.com</a>												
(g)	**** Skewness (horizontal elongation in one direction) and kurtosis (vertical peakedness) are two complementary measures of the relative "normal" or "bell" shape of the numerical distributions implied by the price data in this table; normal distributions (i.e. bell-shaped curves) have skew =0 and kurtosis =0, and are symmetrical about the mean.												

**Unit Costs Applied for Estimating Potential Waste Management Cost Savings**  
**Proposed RCRA Headworks Exemptions for Spent Solvent Wastewaters & Spent Solvent Scrubber Waters**

Source: Capital and O&M cost estimation algorithms below adopted from the USEPA Office of Solid Waste,  
Economics, Methods & Risk Analysis Division, "Unit Cost Compendium", 30 Sept. 2000 (year 2000\$)

Unit Cost Item	BRS Haz Waste Manage-ment System Code	Type of Industrial Wastewater Management System	Wastewater Management Cost Estimation Algorithms	
			Lump-Sum Capital Cost for RCRA Hazardous Wastewater System	Annual O&M Cost for RCRA Hazardous Wastewater System
1	M041	Incineration – liquids	\$0 (amortized with O&M cost)	\$350 per ton
2	M051	Energy recovery (reuse as fuel)	No change assumed in baseline because of energy value recovered	
3	M071	Aqueous inorganic chemical precipitation	$\$1,850 \times (\text{GPM}) + \$138,910$	$\$1,626 \times (\text{GPM}) + \$20,717$
4	M072	Aqueous inorganic chemical precipitation	$\$1,850 \times (\text{GPM}) + \$138,910$	$\$1,626 \times (\text{GPM}) + \$20,717$
5	M074	Aqueous inorganic chemical precipitation	$\$1,850 \times (\text{GPM}) + \$138,910$	$\$1,626 \times (\text{GPM}) + \$20,717$
6	M075	Aqueous inorganic chemical oxidation only	\$140,202	$(0.28 + (0.28 \times (\$19 - \$0.28)))$ per ton
7	M077	Aqueous inorganic chemical precipitation	$\$1,850 \times (\text{GPM}) + \$138,910$	$\$1,626 \times (\text{GPM}) + \$20,717$
8	M078	Other aqueous inorganic treatment	No data: applied unit cost for "neutralization only" as proxy	
9	M079	Other aqueous inorganic treatment	No data: applied unit cost for "neutralization only" as proxy	
10	M081	Aqueous organic biological treatment	$\$62,826 \times (\text{GPM})^{0.5084}$	$\$5,524 \times (\text{GPM})^{0.7702}$
11	M082	Aqueous organic carbon adsorption		
		<20 gpm	\$8,867	\$5,167
		20 to 200 gpm	$\$2,068 \times (\text{GPM}) + \$9250$	$\$474 \times (\text{GPM}) - 0.819(\text{GPM})^2 - \$195$
		>200 gpm	$\$3,402 \times (\text{GPM})^{0.7763}$	$\$1,638 \times (\text{GPM}) + \$26,126$
12	M083	Aqueous organic air/steam stripping		
		10 gpm	\$47,833	\$12,060
		50 gpm	\$58,753	\$20,407
		100 gpm	\$82,464	\$26,026
		500 gpm	\$150,552	\$56,626
		1,000 gpm	\$164,402	\$93,710
		1,600 gpm	\$269,932	\$132,196
		2250 gpm	\$280,101	\$171,797
13	M084	Aqueous organic wet air oxidation	\$140,202	$(0.28 + (0.28 \times (\$19 - \$0.28)))$ per ton
14	M085	Other aqueous organic treatment	No data: applied unit cost for "neutralization only" as proxy	

15	M089	Other aqueous organic treatment	No data: applied unit cost for "neutralization only" as proxy	
16	M091	Aqueous organic & inorganic chemical precipitation with biological treatment	$\$1,850 \times (\text{GPM}) + \$138,910$	$\$1,626 \times (\text{GPM}) + \$20,717$
17	M092	Aqueous organic & inorganic chemical precipitation with carbon adsorption	$\$1,850 \times (\text{GPM}) + \$138,910$	$\$1,626 \times (\text{GPM}) + \$20,717$
18	M094	Other aqueous organic & inorganic treatment	No data: applied unit cost for "neutralization only" as proxy	
19	M099	Other aqueous organic & inorganic treatment	No data: applied unit cost for "neutralization only" as proxy	
20	M101	Sludge dewatering	No data	\$189 per ton
21	M121	Neutralization only	$\$1,060 \times (\text{GPM}) + \$36,138$	$\$1,609 \times (\text{GPM}) - 2.4 \times (\text{GPM})^2 + \$10,698$
22	M122	Evaporation only	No data: applied unit cost for "neutralization only" as proxy	
23	M134	Deepwell injection	\$0 (amortized with O&M cost)	\$95 per ton
24	M135	Direct discharge to sewer/POTW	\$0 (amortized with O&M cost)	2.119 times the respective unit cost for non-haz waste (unlined) surface impoundment*
25	M136	Direct discharge to surface water under NPDES		

**Explanatory Notes:**

- (a) GPM = gallons-per-minute wastewater flow capacity.
- (b) Ton = 2,000 pounds (i.e. short ton)
- (c) \* Based on comparison of the additional unitized (amortized) costs for compliance with RCRA hazardous waste tank system requirements 40 CFR 264/265 Subpart J (tank secondary containment, tank spill/overflow controls, leak repair) + Subpart AA (tank vent control device) + Subpart BB administrative costs + Subpart CC (tank cover/roof), compared to the average unit cost (\$/ton of wastewater flow) for operating onsite non-hazardous waste unlined surface impoundments; on a unitized basis the RCRA costs represent 119% additional cost (i.e. relative cost multiplier = 2.119).
- (d) Important note: cost estimation algorithms in this table applied in this report for purpose of estimating the cost of managing incremental quantities of spent solvent-related wastes at a single facility, rather than for estimating the total cost of managing all waste quantities (i.e. spent solvent-related wastes + other types of solid wastes) which may be generated by a single facility. Because most of the cost estimating algorithms in this table exhibit economies-of-scale (i.e. unit costs per-pound or per-gallon of waste decrease with increasing total waste quantity capacity), at the margin, the costs and cost savings estimated for the incremental quantities of spent solvent-related wastes are overestimates of actual costs and potential cost savings.

<b>Unit Costs</b> <b>for Estimating Hypothetical Non-Hazardous Industrial Wastewater</b> <b>Surface Impoundment Management Costs</b>			
<b>Source: Unit costs below adopted from the USEPA Office of Solid Waste,</b> <b>Economics, Methods &amp; Risk Analysis Division, “Unit Cost Compendium”, 30 Sept. 2000</b>			
Annual Wastewater Quantity (two alternative metric equivalents)		Unit Cost for Surface Impoundment Operation	
kgal/year	tons/year	\$/kgal	\$/ton
<b>A. Unit Costs for Wastewater Treatment in Surface Impoundments (Unlined):</b>			
	0.001	\$0.24	\$1.00
32,000	133,440	\$0.24	\$1.00
160,000	667,200	\$0.08	\$0.33
320,000	1,334,400	\$0.06	\$0.25
800,000	3,336,000	\$0.05	\$0.21
1,600,000	6,672,000	\$0.03	\$0.13
2,400,000	10,008,000	\$0.03	\$0.13
Average =			<b>\$0.43</b>
<b>B. Unit Costs for Wastewater Treatment in Surface Impoundments (average of clay lined and synthetic lined):</b>			
	0.001	\$0.32	\$1.31
32,000	133,440	\$0.32	\$1.31
160,000	667,200	\$0.14	\$0.56
320,000	1,334,400	\$0.11	\$0.44
800,000	3,336,000	\$0.09	\$0.35
1,600,000	6,672,000	\$0.08	\$0.31
2,400,000	10,008,000	\$0.08	\$0.31
Average =			<b>\$0.66</b>

Estimation of Proportion of Industrial Wastewaters Containing F001 to F005 Spent Solvent Chemicals Which Have Headworks Influent Concentrations in Wastewater Less Than the Two Maximum Headworks Concentrations Specified in the RCRA Hazardous Waste “Headworks Exemption”			
Spent solvent chemical	1999 TRI data points	Maximum Influent Concentration Thresholds Specified at 40 CFR 261.3(a)(2)(iv)(A) & (B)	
		% < 1ppm	% < 25ppm
Benzene	382 establishments	31%	43%
2-Ethoxyethanol	7 establishments	29%	33%
1,1,2-Trichloroethane	18 establishments	33%	40%
2-Nitropropane	3 establishments	0%	8%
Averages =		23%	31%
Composite average =		27% [(23% + 31%) / 2]	

**Explanatory Notes:**

(a) The “composite average” computed above ( **27%**) represents estimated fraction of F001 to F005 spent solvent chemicals which are less than either of the two RCRA “headworks exemption” concentration maximum thresholds (i.e. 1ppm or 25ppm, depending upon type of chemical – see 40 CFR 261.3(a)(2)(iv)(A) & (B), respectively), as derived from USEPA 1999 “Toxics Release Inventory” data on concentration of four spent solvent chemicals (benzene, 2-ethoxyethanol, 1,1,2-trichloroethane, and 2-nitropropane) in industrial wastewaters (a data background document to the proposed rule contains the TRI data for these four solvent chemicals on which USPEA OSW derived the estimated percentages in this table).

(b) USEPA OSW estimated fractions of <25ppm concentration range bins in proportion to uniform distribution across TRI-defined 1 to 100 ppm range bins, which may result in over-estimation of <25ppm fractions, because there is survey sample evidence that some industrial RCRA waste mixturte chemical concentrations exhibit negatively-skewed data distributions — see the RCRA mixture waste chemical concentration histogram on page 75 at:  
<http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/final/mwanal.pdf>

<b>Paperwork Unit Cost for the RCRA Hazardous Waste Manifest</b> (Source: USEPA "Hazardous Waste Manifest Cost Benefit Analysis", prepared for the Office of Solid Waste (HWID), by Logistics Management Institute, Oct 2000, Table 3-9, page 3-7, <a href="http://www.epa.gov/epaoswer/hazwaste/gener/manifest/pdf/cba-rprt.pdf">http://www.epa.gov/epaoswer/hazwaste/gener/manifest/pdf/cba-rprt.pdf</a> )		
Item	Entities Which Incur Portions of Manifest Paperwork Cost (types of facilities involved in manifest transport custody chain from cradle-to-grave movement of waste)	Average Cost Per Manifest (year 2000\$)
1	Waste generators (average for SQGs & LQGs)	\$113.50
2	Waste transporters	\$117.35
3	Waste receivers (average for small, medium & large waste treatment, storage, disposal facilities (TSDFs))	\$59.50
4	State governments	\$9.61
Column total =		<b>\$300</b>

<b>Computation of Future Growth Rate in US Demand for Industrial Solvents</b>			
	A	B	C
Forecast year	Average solvent price (\$/pound)	Forecasted US solvent demand	Implied solvent pounds (B / A)
2000	\$0.31	\$3,291,000,000	10,616,129,032
2005	\$0.33	\$3,585,000,000	10,863,636,364
2010	\$0.35	\$4,025,000,000	11,500,000,000
Implied average annual growth rate in solvent quantity (2000 to 2010) =			<b>0.73%</b>
Source: The Freedonia Group, Industry Study Nr. 1418: "Solvents: Green & Conventional", May 2001, 290 pp. <a href="http://freedoniagroup.com/cbg/Solvents-green-And-Conventional.html">http://freedoniagroup.com/cbg/Solvents-green-And-Conventional.html</a> .			

Waste Shipment Cost Between Point of Waste Generation, and Point of Offsite Waste Management Unit Cost Data Sources & Data Triangulation to Derive Average Trucking Unit Costs									
Data Source Cases				Data Source Reference Trucking Cost Data (\$ per full truckload)			OSW-Unitized Trucking Cost Data* (\$ per ton per mile)		
Data Source A:     The Technical Group - Six Industrial Hazardous Waste Shippers (17 March 1994 memo to USEPA Office of Solid Waste):  Note: Does not differentiate between (a) liquid vs solid waste form; or (b) USDOT non-hazardous material category.									
Datum Case (solid waste form only)		Shipment market	Shipping miles	RCRA haz waste	USDOT haz mat	Non-haz material	RCRA haz waste	USDOT haz mat	Non-haz material
A1	Case 1	OR to CA	987	\$2,400	\$1,000	NR	\$0.12	\$0.05	NR
A2	Case 2	GA to IN	600	\$1,400	\$630	NR	\$0.12	\$0.05	NR
A3	Case 3	KS to IN	500	\$1,350	\$575	NR	\$0.14	\$0.06	NR
A4	Case 4	NY to NY	100	\$600	\$350	NR	\$0.30	\$0.18	NR
A5	Case 5	IN to IN	60	\$533	\$160	NR	\$0.44	\$0.13	NR
A6	Case 6	NY to NY	28	\$533	\$160	NR	\$0.95	\$0.29	NR
A7	Average (</=60 miles)=		44	\$533	\$160	NR	\$0.70	\$0.21	NR
A8	Average (>60 miles)=		547	\$1,438	\$639	NR	\$0.17	\$0.08	NR
Data Source B:     DPRA Inc.- “Hazardous Waste Transportation Cost” engineering cost functions (18 Nov 1993 memo to USEPA Office of Solid Waste):** Note: Does not differentiate between USDOT hazardous material category.									
Datum Case		Truck load size	Shipping miles	RCRA haz waste	USDOT haz mat	Non-haz material	RCRA haz waste	USDOT haz mat	Non-haz material
B1	Liquids:	(25 tons/load)	25-50	\$300	NR	NR	\$0.32	NR	NR
B2			>50	\$1,547	NR	NR	\$0.23	NR	NR
B3	Solids:	(20 tons/load)	25-500	\$1,449	NR	NR	\$0.22	NR	NR
B4	Not specified:	(20-25 tons/load)	25-500	\$1,093	NR	NR	\$0.19	NR	NR
Data Source C:     ICF - Industry Shipping Cost Survey (31 Aug 1998 memo to USEPA Office of Solid Waste):  Note: Differentiates between both (a) solid vs liquid form; and (b) hazardous material category.									
Datum Case		Truck load size	Shipping miles	RCRA haz waste	USDOT haz mat	Non-haz material	RCRA haz waste	USDOT haz mat	Non-haz material
C1	Liquids:	(25 tons/load)	<50	\$173	\$156	\$136	\$0.18	\$0.17	\$0.14
C2	Solids:	(20 tons/load)	<50	\$150	\$136	\$118	\$0.20	\$0.18	\$0.16
C3	Liquids:	(25 tons/load)	50 to 400	\$140	\$99	\$90	\$0.15	\$0.11	\$0.10
C4	Solids:	(20 tons/load)	50 to 400	\$103	\$86	\$78	\$0.14	\$0.11	\$0.10
OSW-Triangulated Reference Unit Cost Data (Average of Three Data Sources):***									

Cost Summary Categories		Truck load size	Shipping miles				RCRA haz waste	USDOT haz mat	Non-haz material
	Liquids:	(25 tons/load)	<50				\$0.23	\$0.17	\$0.14
	Solids:	(20 tons/load)	<50				\$0.33	\$0.20	\$0.16
	Liquids:	(25 tons/load)	50 to 400				<b>\$0.19</b>	\$0.11	<b>\$0.10</b>
	Solids:	(20 tons/load)	50 to 400				\$0.16	\$0.10	\$0.10

**Explanatory Notes:**

- (a) OSW derivation of average incremental trucking cost for shipping RCRA hazardous waste compared to non-hazardous materials:  

$$[(\$0.19 \text{ per ton per mile}) - (\$0.10 \text{ per ton per mile})] \times (200 \text{ miles/trip}) = \textbf{\$18 per ton per trip.}$$
- (b) \* Unitized data= Standardization to enable comparison between multiple sources, and application as computation factors.
- (c) \*\* National cost computation algorithms applied (source: DPRA memo to USEPA Office of Solid Waste (EMRAD), 18 Nov 1993):  
! Haz liquid waste (25-50 miles): \$cost =  $[0.05 \times (\text{tons}) \times (2,000 \text{ lbs/ton}) / (8.34 \text{ lbs/gal})]$   
! Haz liquid waste (50-500 miles): \$cost =  $[0.0012 \times (\text{miles})^{0.9562} \times [\text{tons} \times (2,000 \text{ lbs/ton}) / (8.34 \text{ lbs/gal})].$   
! Haz solid waste (0-500 miles): \$cost =  $[0.94 \times (\text{miles})^{0.78} \times [\text{tons}].$
- The cost algorithms are based on full truck load shipments; partial load shipments have higher unit prices.
- (d) \*\*\* Data triangulation by computation of simple average for overlapping unit cost data above in each waste form category.

Computation of Quantity Ratio Between RCRA Industrial Wastewater and Wastewater Sludge			
Source: Based on Data Provided to the USEPA Office of Solid Waste 1996 “National Hazardous Waste Constituent Survey” (NHWCS)			
(http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/economic.htm; see webpage item 4)			
Algorithm Applied	Data Source	Computation	Computation Result Interpretation
#1: (1,000,000 gallons wastewater) x (%solid & organic matter in wastewater) = gallons of solid & organic matter content in wastewater treatment sludge	Source: 2.4%* is the weighted-average solid/organic matter (non-water) content in RCRA hazardous waste industrial wastewaters, according to data supplied to the 1996 NHWCS.	(1,000,000 gallons wastewater) x (2.4% solid & organic matter) = 24,000 gallons solid & organic matter content	Fundamental beginning relationship relative to million gallons quantity of industrial wastewater.
#2: (X gallons wastewater treatment sludge) = (result from algorithm #1) / (%solid & organic matter in wastewater sludge)	Source: 30.0%* is the weighted-average solid/organic matter (non-water) content in RCRA hazardous wastewater treatment sludges, according to data supplied to the 1996 NHWCS.	Need to solve the following equation for X: [X gallons sludge] x (30.0% solid & organic matter) = 24,000 gallons solid & organic matter content (from Computation #1)	Sludge equivalency based on Computation #1.
		Solution is: [X gallons sludge] = (24,000 gallons) / (30.0%) = 80,000 gallons sludge	
#3: (result from computation #2) x (specific gravity of pure water) x (specific gravity of sludge) x (1 ton per 2,000 pounds) = tons of sludge estimated	Source: ! 1.044 is the weighted-average specific gravity of RCRA hazardous wastewater treatment sludges, according to data supplied to the 1996 NHWCS. ! 8.34 pounds/gallon is the specific gravity of pure water.	(80,000 gallons sludge from Computation #2) x (8.34 pounds/gallon) x (1.044 specific gravity of sludge) x (1 ton/2,000 pounds) = 341.2 tons sludge.	On average, 1,000,000 gallons of RCRA industrial wastewater produces 341.2 tons sludge.
#4: Unitized equivalency of result from computation #3		(one ton sludge) = (1,000,000 gallons wastewater from Computation #1) / (341.2 tons sludge from Computation #3) = 2,931 gallons wastewater	On average, <b>2,931 gallons</b> of RCRA industrial wastewater produces 1.0 ton of sludge.
#5: Unitized equivalency of result from computation #4.	Source: ! 1.008 is the weighted-average specific gravity of RCRA hazardous waste industrial wastewater, according to data supplied to the 1996 NHWCS. ! 8.34 pounds/gallon is the specific gravity of pure water.	(2,931 gallons wastewater) x (8.34 pounds/gallon) x (1.008 specific gravity of wastewater) x (1 ton/2,000 pounds) = 12.3 tons wastewater.	On average, 12.3 tons of RCRA industrial wastewater produces 1.0 ton of sludge (sludge:to:WW ratio = 8.3%).
Explanatory Notes:			
(a) * The weighted-averages above are weighted according to the annual quantities (tons) of wastestreams in the NHWCS database which meet the query criteria. The computation results above are sensitive to whether the non-weighted means, medians, or weighted-averages for waste specific gravities and waste %solids/organic matter are applied in the computations, because of differences in numerical values for each of these three alternative measures of central tendency for each NHWCS data subset. NHWCS database sample sizes (datapoints) for these two factors are (1993 USEPA hazardous waste “Biennial Reporting System” benchmark quantities are 220 million tons RCRA industrial wastewater & 15 million tons non-wastewater, of which 209,000 tons went to sludge treatment; see http://www.epa.gov/epaoswer/hazwaste/data/br93/na-pdf.pdf):			
Specific gravity%solids/organic matter			
! Industrial wastewaters: 142 NHWCS wastestreams (198.0 million tons/year in 1993) 102 NHWCS wastestreams (96.4 million tons/year in 1993)			
! Industrial wastewater sludges: 27 NHWCS wastestreams (387,000 tons/year in 1993) 15 NHWCS wastestreams (166,000 tons/year in 1993)			
(b) In comparison to industrial wastewaters & sludges, the typical concentration of solid/organic matter in raw municipal wastewater is 0.02%, and the typical municipal wastewater treatment raw sludge is 4% (source: Viessman, Jr. & Hammer, “Water Supply & Pollution Control”, 4 <sup>th</sup> ed., Harper Collins Publishers Inc., 1985, p.572.)			

**Derivation of Average "Unit Cost" (\$/ton)  
for Managing RCRA Hazardous Waste Industrial Sludges**  
Sludge quantities based on a sample of sludge data contained in the USEPA Office of Solid Waste 1996 NHWCS database  
(query criterion: if waste physical form codes = B501 to B609)

Item	Data Elements Extracted from the 1996 OSW NHWCS Database							OSW Estimates	
	EPAID	Waste stream ID nr.	BRS waste physical form code	1993 sludge quantity (tons/year)	Sludge management system	Sludge management description	Sludge management location	Haz waste management unit cost* (\$/ton)	Sludge management annual cost (\$/year)
1	IDD073114654	7	B512	1,057	M132	Landfill	Offsite	\$152	\$160,719
2	ILD000805812	6	B512	37,768	M132	Landfill	Offsite	\$152	\$5,740,727
3	IND000810861	3	B504	48,761	M101	Sludge dewatering		\$189	\$9,215,768
4	IND006050967	1	B607	1,319	M041	Incineration - liquids		\$350	\$461,659
5	IND006050967	9	B607	1,221	M041	Incineration - liquids		\$350	\$427,522
6	IND093219012	1	B504	1,620	M111	Stabilization/chemical fixation	Offsite	\$89	\$144,205
7	IND093219012	5	B504	3,085	M111	Stabilization/chemical fixation	Offsite	\$89	\$274,580
8	IND093219012	7	B504	929	M111	Stabilization/chemical fixation	Offsite	\$89	\$82,660
9	IND093219012	11	B504	929	M111	Stabilization/chemical fixation	Offsite	\$89	\$82,660
10	IND093219012	13	B504	929	M111	Stabilization/chemical fixation	Offsite	\$89	\$82,660
11	IND093219012	15	B504	929	M111	Stabilization/chemical fixation	Offsite	\$89	\$82,660
12	LAD000777201	10	B504	5,773	M132	Landfill	Offsite	\$152	\$877,444
13	LAD056024391	2	B503	12,101	M124	Phase separation (e.g. filtration)		\$189	\$2,286,995
14	LAD981057706	16	B503	1,506	M052	Energy recovery - sludges	Offsite	\$473	\$712,543
15	MID005358130	2	B512	1,944	M101	Sludge dewatering		\$189	\$367,416
16	MID048090633	3	B504	1,816	M132	Landfill	Offsite	\$152	\$276,107
17	NJD002385730	1	B607	35,858	M132	Landfill		\$152	\$5,450,416
18	NYD980592497	9	B607	10,026	M125	Other treatment		\$189	\$1,894,914
19	ORD009020231	4	B504	1,008	M101	Sludge dewatering	Offsite	\$189	\$190,535
20	PAD980550594	1	B503	8,087	M101	Sludge dewatering		\$189	\$1,528,443
21	TND003376928	8	B503	148,355	M049	Incineration - type unknown		\$350	\$51,924,250
22	TXD007330202	6	B607	29,904	M042	Incineration - sludges		\$350	\$10,466,400
23	TXD069452340	1	B504	2,672	M111	Stabilization/chemical fixation		\$56	\$149,652

24	TXD980626774	2	B503	1,084	M132	Landfill		\$152	\$164,768	
25	TXD980626774	3	B504	2,610	M132	Landfill		\$152	\$396,720	
26	WVD004325353	4	B607	8,720	M132	Landfill		\$152	\$1,325,474	
27	WVD005005509	3	B503	16,805	M132	Landfill		\$152	\$2,554,360	
Summary Statistics:		Column total =	386,817	Ton-weighted average =				\$252	\$97,322,256	
								Min =	\$56	
								Max =	\$473	
								Mean =	\$184	
								Median =	\$152	
* Itemized sludge management system-specific unit costs assigned from the OSW Sept 2000 "Unit Cost Compendium" or related sources.										

<b>State Hazardous Waste Taxes</b> <b>Estimation of National Average State Fees Charged for Hazardous Waste</b> <b>(Notes: reference data from 1990-1996, and do not include hazardous waste generation fees)</b>							
Item	State	A. Annual Haz Waste Quantities:		B. State Haz Waste Taxes:		C. State Non-Haz Waste Taxes:	
		Subtotal land disposal (1993 NHWCS tons)	Subtotal incineration (1993 NHWCS tons)	Land disposal tax rate (\$/ ton)	Incineration tax rate (\$/ton)	Land disposal tax rate (\$/ ton)	Incineration tax rate (\$/ton)
1	AL	117,282	54,629	\$40.00	\$0	\$0	\$0
2	AK	0	0	\$0	\$0	\$0	\$0
3	AZ	0	0	\$2.00	\$2.00	\$0	\$0
4	AR	640,619	92,320	\$0	\$0	\$0	\$0
5	CA	92,643	37,090	\$157.50	\$0	\$0	\$0
6	CO	57,412	0	\$0	\$0	\$0	\$0
7	CT	0	5,788	\$15.00	\$15.00	\$0.50	\$0
8	DE	0	0	\$12.00	\$2.00	\$0	\$0
9	DC	0	0	\$0	\$0	\$0	\$0
10	FL	0	0	\$0	\$0	\$0	\$0
11	GA	0	32,080	\$0	\$0	\$0	\$0
12	HW	0	0	\$0	\$0	\$0	\$0
13	ID	571,197	0	\$20.00	\$0	\$0	\$0
14	IL	373,006	29,866	\$17.90	\$5.97	\$0	\$0
15	IN	591,942	212,129	\$11.50	\$11.50	\$0	\$0
16	IA	0	0	\$50.00	\$10.00	\$0	\$0
17	KS	1,338,813	89,653	\$7.94	\$1.59	\$0	\$0
18	KY	0	115,092	\$24.10	\$12.05	\$0	\$0
19	LA	3,684,421	188,151	\$85.00	\$0	\$0	\$0
20	ME	0	0	\$40.00	\$30.00	\$0	\$0
21	MD	0	0	\$0	\$0	\$0	\$0
22	MA	0	0	\$0	\$0	\$1.00	\$0
23	MI	213,989	143,083	\$10.00	\$0	\$0	\$0
24	MN	0	14,162	\$77.11	\$19.28	\$0.45	\$0
25	MS	1,497,900	4,658	\$10.00	\$2.00	\$1.00	\$1.00
26	MO	7,090	416,686	\$26.00	\$1.00	\$0	\$0
27	MT	0	0	\$0	\$0	\$0	\$0
28	NE	0	0	\$0	\$0	\$0	\$0
29	NV	71,281	0	\$10.00	\$5.00	\$0	\$0
30	NH	0	0	\$60.00	\$60.00	\$1.00	\$0
31	NJ	46,780	22,797	\$0	\$0	\$0	\$0
32	NM	0	0	\$0	\$0	\$0	\$0

33	NY	107,726	88,575	\$27.00	\$9.00	\$0	\$0
34	NC	0	0	\$0	\$0	\$0	\$0
35	ND	0	0	\$0	\$0	\$0	\$0
36	OH	830,429	162,828	\$9.00	\$2.00	\$0	\$0
37	OK	88,269	0	\$0	\$0	\$0	\$0
38	OR	107,641	0	\$20.00	\$20.00	\$0	\$0
39	PA	38,971	94,487	\$16.00	\$9.00	\$0	\$0
40	RI	0	0	\$0	\$0	\$0	\$0
41	SC	73,799	67,398	\$34.00	\$10.00	\$0	\$0
42	SD	0	0	\$50.00	\$50.00	\$0	\$0
43	TN	11,021	190,970	\$5.00	\$2.50	\$0	\$0
44	TX	8,061,824	1,894,789	\$10.00	\$0	\$1.45	\$0
45	UT	43,338	3,246	\$9.00	\$9.00	\$0	\$0
46	VT	0	0	\$112.00	\$56.00	\$6.00	\$0
47	VA	0	40,368	\$0	\$0	\$0	\$0
48	WA	0	0	\$0	\$0	\$8.03	\$8.03
49	WV	28,627	18,877	\$35.29	\$26.47	\$0	\$0
50	WI*	0	9,496	\$0.50	\$0	\$0.30	\$0
51	WY	0	0	\$0	\$0	\$0	\$0
Column totals =		18,696,022	4,029,218				
Count of states with tax rate > \$0/ton =				31	24	9	2
Mean tax rate (\$/ton) =				\$19.68	\$7.28	\$0.39	\$0.18
Tons-weighted mean tax rate (\$/ton) =				<b>\$25.87</b>	\$2.13		
Median tax rate (\$/ton) =				\$9.00	\$0.00	\$0.00	\$0.00
Max tax rate (\$/ton) =				\$157.50	\$60.00	\$8.03	\$8.03
<b>Explanatory Notes:</b>							
(a) State solid waste tax rate sources: --- Hilary Sigman, Journal of Env Economics & Mgmt, Vol.30, pp.199-217, 1996 (based on chlorinated solvent taxes). --- J. Andrew Hoerner, State Tax Notes (journal), Vol.14, No.16, 20 April 1998, Tables 4 & 5.							
(b) Limitations of This Data Table: --- This table does not differentiate & include special categories of waste taxes (batteries, tires, used oil, acutely toxic). --- This table does not include indirect taxes and other tax provisions related to solid waste (e.g. bottle deposit). --- Municipalities and counties in some states have waste management fees, which are not included in this table.							
--- * WI approved an increase in its solid waste disposal fee to \$3/ton effective 01 Jan 2002, but is legally contested. Source: <a href="http://www.wastenews.com/headlines2.html?id=1008105423">http://www.wastenews.com/headlines2.html?id=1008105423</a>							
(c) NHWCS = EPA-OSW "National Hazardous Waste Constituent Survey" database (1993 base).							
(d) Land disposal = represents M11x or M13x BRS system type codes managed (but not necessarily generated) in state.							
(e) Incineration = represents M04x or M05x or M06x BRS system type codes managed (but not necessarily generated) in state.							

**Physical Properties of RCRA Hazardous Industrial Wastewaters**  
**Source: USEPA Office of Solid Waste, 1996 “National Hazardous Waste Constituent Survey” (NHWCS)**  
**NHWCS database query criterion: if wastewater? (“WW”) datafield response = yes (“Y”)**  
<http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/economic.htm> (See webpage item 4)

Item	EPAID	Waste stream ID nr.	SIC code	Waste water?	Industrial Wastewater Description	Source code	System code	1993 quantity managed (tons)	A	B	C	D	E	F	G	H	(100 - F)
									%Solids	%TSS	%Ash	%TOC	%Oil	%H2O	Specific gravity	pH	%Non-H2O
1	ALD021257951	1	4789	Y	GROUNDWATER CONTAMINATED WITH CARBON DISULFIDE, DINOSEB	A63	M082	101,542							1.000		
2	ALD046481032	1	3341	Y	ELECTROLYTE (H2SO4) FROM BATTERY RECYCLING OPERATIONS	A72	M077	49,487	1.00	0.19	96.00	0.00	0.00	99.00	1.090	2.0	1.00
3	ARD043195429	1	2819	Y		A75	M134	640,619		0.00				99.90	1.000	6.2	0.10
4	CAD008268302	1	3721	Y	HAZARDOUS WASTE LIQUID; PROCESS RINSE WATER FROM METAL FINISHING	A31	M071	180,000		0.00		0.00	0.00	99.90	1.000		0.10
5	CAD008274938	1	3312	Y	ACID RINSEWATER FROM HCL PICKLING OF STEEL	N/A	M121	592,140							1.000		
6	CAD009164021	2	2911	Y	PROCESS WATER AND STORM WATER FROM PETROLEUM REFINING	A49	M081	7,450,000							1.000		
7	CAD041472986	1	3674	Y	NON CYANIDE WASTEWATER CONTAINING HEAVY METALS FROM PLAT	A04	M077	109,507							1.000		
8	CAD041472986	2	3674	Y	CYANIDE WASTE RINSEWATER	A04	M072	108,647							1.000		
9	CAD041472986	3	3674	Y	ACIDIC WASTEWATER FROM SEMICONDUCTOR FABRICATION PROCESS	A04	M121	1,247,464							1.000		
10	CAD067786749	1	4953	Y	COMMINGLED F039 LEACHATE, GAS CONDENSATE AND CONTAMINATE	A79	M085	58,239		0.02		0.06	0.01	99.92	1.000	6.5	0.08
11	CAD067786749	2	4953	Y	TREATED EFFLUENT LIQUIDS FROM WASTEWATER TREATMENT PLANT	A79	M131	58,239		0.01		0.00	0.00	99.99	1.000	7.1	0.01
12	CAD093365435	1	3764	Y	GROUNDWATER PUMPED AND TREATED ON SITE	A69	M083	481,768	0.00	0.00				100.00	1.000	7.3	0.00
13	CAD097030993	1	3471	Y	SPENT ACID SOLUTION & RINSE WATER FROM SURFACE PREPARATI	A26	M077	215,953	10.00					90.00	1.070	2.0	10.00
14	CAD097030993	2	3471	Y	SPENT CAUSTIC SOLUTION AND RINSE WATER FROM PLATING AND	A03	M077	113,383	15.00					85.00	1.050	10.6	15.00
15	CAD097030993	3	3674	Y	ALKALINE SOLUTION WITHOUT METALS PH > 12.5	N/A	M121	2,749	0.00					100.00	1.060	12.7	0.00
16	CO7890010526	2	3489	Y	WASTEWATERS - COLLECTED AND TREATED BY OU2, CONTAIN SPEN	A79	M082	37,976							1.000		

17	GA1570024330	1	9711	Y	INDUSTRIAL WASTEWATER PLANT INFLUENT.	A29	M071	433,938	0.08	0.01	0.04	0.00	0.00	99.95	0.984	8.0	0.05
18	IDD009066481	1	3482	Y	NON CN WASTEWATER	A19	M077	386,563	1.00	1.00	0.00	0.00	1.00	98.00	1.100	10.5	2.00
19	IDD009066481	2	3482	Y	CN WASTEWATER	A22	M072	107,777	1.00	1.00	0.00	0.00	0.00	99.00	1.100	10.5	1.00
20	IDD070929518	1	2819	Y	MEDUSA SCRUBBER BLOWDOWN FROM QUENCHING OF FUGITIVE	A78	M078	264,561	1.48	0.12			0.00	98.52	1.020	4.9	1.48
21	IDD070929518	3	2819	Y	FURNACE WASHDOWN CONSISTING OF WASHDOWN OF FURNACE BUILD	A92	M133	337,295	1.60	0.08			0.00	98.40	1.020	6.3	1.60
22	ILD080012305	1	2911	Y		A33	M081	9,870,013							1.000		
23	ILD080012305	2	2911	Y		A37	M121	229,755							1.040		
24	IND000810861	2	2911	Y	SCRUBBER SLURRY GENERATED FROM INCINRATOR OFF-GAS WET	A74	M101	284,628	0.21					99.79	1.000	10.5	0.21
25	IND003913423	1	3312	Y	SPENT PICKLE LIQUOR FROM STEEL FINISHING OPERATIONS	A26	M134	41,225							1.250	1.0	
26	IND003913423	2	3312	Y	WASTE AMMONIA LIQUOR FROM COKING OPERATIONS (AQUEOUS LIQ	A78	M134	370,880		0.00					1.000	9.1	
27	IND003913423	4	3312	Y	BAROMETRIC CONDENSER BLOWDOWN	A49	M083	109,588							1.000		
28	IND003913423	5	3312	Y	FINAL COOLER CONDENSATE	A78	M083	43,827							1.000		
29	IND006050967	15	2833	Y	SCRUBBER WATER FROM INCENERATION OF LIQUID HAZARDOUS WASTE	A78	M081	756,714		0.02		0.00		99.00	1.000	4.0	1.00
30	KSD007482029	2	2812	Y	HAZ WASTEWATER CONTAINS ACID CAUSTIC & TRACE ORGANIC CHEMICALS	A69	M134	1,214,480	0.00		0.00	0.10	0.00	99.00	1.030	0.0	1.00
31	KSD087418695	1	2911	Y	PETROLEUM REFINING WASTEWATER; BENZENE CONTAMINATED	A35	M081	1,704,696							1.000		
32	LAD001700756	1	2842	Y	EFFLUENT WASTEWATERS FROM CHLORINATED ACID (ACL)/CYANURI	A32	M121	358,398	3.00	0.10	0.00	0.26		93.00	1.043		7.00
33	LAD001890367	5	2822	Y	Brine stream mixed with hazardous wastewater treatment	A37	M094	216,910	1.00	17.00	18.00	0.01	0.00	80.00	1.150	14.0	20.00
34	LAD001890367	6	2822	Y	Toxic wastewater from production of chlorobutadienes.	A09	M094	71,152	0.00	0.00	0.00	0.00	0.00	99.90	1.050	10.0	0.10
35	LAD001890367	8	2822	Y	Toxic, corrosive scrubber water from absorption system p	A74	M094	89,884	0.00	0.00	0.00	0.01	0.00	99.99	1.000	4.0	0.01
36	LAD001890367	10	2822	Y	BRINE STREAM MIXED WITH HAZARDOUS WASTEWATER TREATMENT E	A75	M134	216,910	17.00	1.00	18.00	0.01	0.00	80.00	1.150	12.0	20.00
37	LAD001890367	11	2822	Y	TOXIC WASTEWATER FROM PRODUCTION OF CHLOROBUTADIENES.	A75	M134	71,152	0.00	0.00	0.00	0.00	0.00	99.90	1.050	10.0	0.10
38	LAD001890367	12	2822	Y	TOXIC, CORROSIVE SCRUBBER WATER FROM	A75	M134	89,884	0.00	0.00	0.00	0.01	0.00	99.99	1.000	4.0	0.01

					ABSORPTION SYSTEM O												
39	LAD008080350	1	2911	Y	PROCESS WASTEWATER FROM PROCESS SEWERS; MIXTURE OIL, WAT	A37	M094	14,179,084		0.00		0.00	0.00		1.000	5.0	
40	LAD008175390	1	2869	Y	MIXTURE (INCLUDES NUMEROUS PROCESS STREAMS AND CONTAINME	A37	M125	644,273	0.20	0.03	0.05	0.35		99.37	0.987	5.0	0.63
41	LAD008175390	3	2869	Y	BOTTOMS STREAM FROM THE STRIPPER COLUMN IN THE PRODUCTIO	A37	M125	398,803	0.88	0.00	0.02	0.59		98.51	0.987		1.49
42	LAD008175390	4	2869	Y	BOTTOMS STREAM FROM THE WASTEWATER STRIPPER IN THE	A37	M125	479,258	5.00	0.00	0.01	1.50		93.49	1.039	1.9	6.51
43	LAD008175390	5	2869	Y	MIXTURE (INCLUDES NUMEROUS PROCESS STREAMS AND CONTAINME	A37	M134	644,273	0.76	0.00	0.14	0.35		98.76	0.987	10.0	1.24
44	LAD008175390	6	2869	Y	SPENT ACID FROM METHYL METHACRYLATE PRODUCTION	A37	M134	232,565	69.99	0.03	0.04	2.31		31.76	1.457		68.24
45	LAD008175390	7	2869	Y	BOTTOMS STREAM FROM THE STRIPPER COLUMN IN THE PRODUCTIO	A37	M134	398,803	0.88	0.00	0.02	0.59		98.51	0.987		1.49
46	LAD008175390	8	2869	Y	BOTTOMS STREAM FROM THE WASTEWATER STRIPPER IN THE PRODU	A37	M134	479,258	9.18	0.00	0.14	1.50		89.18	1.039	3.9	10.82
47	LAD008187080	14	2869	Y	PARTICULATES FROM INCINERATION OF WASTES	A74	M077	987,623							1.000		
48	LAD008187080	15	2869	Y	LEACHATE AND RUNOFF FROM HAZARDOUS WASTE LANDFILL OPERAT	A74	M136	12,315							1.000	1.0	
49	LAD008213191	1	2869	Y	SEF/PT SYSTEM (UIC WASTEWATER PRETREATMENT SYSTEM)	A33	M134	1,377,392	4.30	0.00		0.06		95.60	1.032	9.1	4.40
50	LAD040776809	3	2869	Y	PROCESS WATERS AND STORMWATER CLASSIFIED AS HAZARDOUS DU	A33	M081	195,470	2.00	0.00		2.00	0.10	98.00	1.000	11.0	2.00
51	LAD040776809	4	2869	Y	PROCESS WATERS AND STORMWATER CLASSIFIED AS HAZARDOUS DU	A33	M081	221,228	0.00	0.00	1.00	1.00	0.00	99.90	1.000	8.0	0.10
52	LAD041581422	5	2869	Y	PLANT CONTAMINATED WASTE WATER	A49	M081	3,581,663		0.01		0.22		99.90	1.000	6.0	0.10
53	LAD056024391	1	2911	Y	PROCESS WASTEWATER AND STORMWATER FROM OPERATING AREAS T	A49	M081	4,959,000	0.01	0.00	0.00	0.00	0.00	99.98	1.000	7.3	0.02
54	MID000724724	7	2899	Y	SCRUBBER WATER FROM INCINERATION COMPLEX	A74	M091	6,891,229						100.00	1.000	1.0	0.00
55	MID000724724	10	2899	Y	WASTEWATER FROM PRODUCTION PLANTS AND RESEARCH LABS	A19	M091	9,083,581							1.000		
56	MID000724724	13	2899	Y	CONTAMINATED GROUNDWATER FROM COLLECTION TILE SYSTEM	A89	M091	2,185,177		0.00				100.00	1.000		0.00
57	MID000809632	1	2869	Y	SOLIDS REMOVAL FROM IGNITABLE WASTEWATER	A37	M123	42,552							1.000		

58	MID000809632	2	2821	Y	IGNITABLE SPENT SOLVENTS AND BY-PRODUCTS FROM SILICONE M	A31	M123	98,603							1.000		
59	MID000809632	3	2869	Y	AQUEOUS HCL BRINE CONTAINING SILICONE GEL	A78	M124	242,135							1.000		
60	MID005358130	1	2911	Y	REFINERY PROCESS WASTEWATER WHICH CONTAINS TC CONCENTRAT	A35	M081	881,774	0.05	0.05			0.01	99.95	1.000	7.5	0.05
61	MND006162820	1	2911	Y	PROCESS WASTEWATER WITH BENZENE EXCEEDING THE	A35	M081	3,422,907	0.12	0.01	0.01	0.01	0.01	99.85	1.000	6.0	0.15
62	MND006172969	1	2869	Y	LIQUID EFFLUENT INCINERATOR SCRUBBER WATER FROM AIR POLL	A74	M077	2,502,000						100.00	1.000		0.00
63	MOD050226075	1	2879	Y	AQUEOUS AND ORGANIC WASTEWATER FROM PHOSPHATE, TERBUFOS AN	A37	M041	40,989			5.00			95.00	1.040	11.7	5.00
64	MOD050226075	2	2879	Y	AQUEOUS AND ORGANIC WASTE FROM THE PRODUCTION OF PENDAME	A37	M041	140,006			8.90			91.10	1.100	10.7	8.90
65	MSD008186587	1	2822	Y	AQUEOUS WASTE	A37	M134	555,692							1.030		
66	MSD096046792	1	2816	Y	IRON CHLORIDE SOLUTION	A35	M134	939,650	23.00	0.00		0.00		74.00	1.170	0.0	26.00
67	NDD006175467	1	2911	Y	REFINERY WASTE WATER	A75	M081	593,348	0.24	0.00	0.00	0.01	0.00	99.76	1.000	8.3	0.24
68	NJD002385730	4	2869	Y		A37	M091	519,918		0.01		0.00		99.99	1.000	1.6	0.01
69	NJD002385730	5	2869	Y		A37	M091	2,581,578	1.00	1.00	0.10			97.90	1.000	7.2	2.10
70	NJD002385730	6	2869	Y		A37	M091	645,587	1.00	0.00	0.10	0.01		98.89	1.000	6.9	1.11
71	NJD002385730	7	2869	Y		A37	M091	530,268	1.00	0.00	0.10	0.00		98.90	1.000	7.0	1.10
72	NJD002385730	8	2869	Y		A37	M091	554,371	1.00	0.00	0.10	0.00		98.90	1.000	7.0	1.10
73	NJD002385730	9	2869	Y		A37	M091	519,916	1.00	0.01		0.09		98.90	1.000	1.3	1.10
74	NJD002385730	10	2869	Y		A37	M091	648,571	1.00	0.00	0.10	0.00		98.90	1.000	8.5	1.10
75	NJD002385730	12	2869	Y		A51	M091	519,915	1.00	0.00	0.10	0.00		98.89	1.000	7.9	1.11
76	NJD002385730	13	2869	Y		A37	M091	2,504,380		0.00		0.00		100.00	1.000	1.9	0.00
77	NJD002385730	14	2869	Y		A37	M091	519,917	1.00	0.00	0.10			98.89	1.000	8.0	1.11
78	NJD002385730	15	2889	Y		A37	M091	519,917	1.00	1.00	0.10			97.90	1.000	2.0	2.10
79	NJD002385730	16	2869	Y		A37	M091	519,918	1.00	0.00	0.10	0.26		98.64	1.000	4.8	1.36
80	NJD002385730	17	2869	Y		A63	M091	3,235,943	1.00	0.00	0.10	0.00		98.89	1.000	10.1	1.11
81	NJD002385730	18	2869	Y		A04	M091	658,314	1.00	0.00	0.10	0.00		98.90	1.000	7.4	1.10
82	NJD002385730	19	2869	Y		A63	M091	768,033	1.00	1.00	0.10			97.90	1.000	5.9	2.10

83	NJD002385730	20	2869	Y		A63	M091	768,033	1.00	0.01	0.10	0.00		98.89	1.000	5.7	1.11
84	NYD002014595	1	2869	Y	WASTEWATER FROM PYRIDINE PRODUCTION AND STORMWATER	A34	M041	49,077							1.000		
85	NYD986874501	1	3571	Y	SOLVENT CONTAMINATED GROUNDWATER REMEDIATION USING AN AI	A63	M083	445,193	0.00	0.00	0.00	0.00	0.00	100.00	1.000	7.5	0.00
86	OHD042157644	1	2869	Y	BTM STREAM WW STRIPPER IN PRODN OF ACRYLO	A33	M134	339,225	4.50	0.02		2.20	0.00	95.00	1.052	5.2	5.00
87	OHD042157644	2	2869	Y	BTM STREAM ACETO COLUMN IN PRODN OF ACRYLO	A33	M134	414,846	0.65	1.00		0.63	0.00	99.00	1.000	6.5	1.00
88	OKD000829440	4	3339	Y	PROCESS WATER: WATER THAT COMES IN DIRECT CONTACT WITH	A09	M077	849,331							1.000		
89	ORD009020231	1	3679	Y	CORROSIVE WASTEWATERS FROM CLEANING, PLATING AND PREP	A01	M077	97,257	1.00	1.00	0.00	1.00	1.00	99.00	1.050	3.0	1.00
90	ORD009020231	2	3679	Y	CORROSIVE WASTEWATER FROM ION EXCHANGE REGENERATION.	A31	M121	282,481	1.00	1.00	0.00	1.00	1.00	99.00	1.050	2.7	1.00
91	ORD009020231	3	3679	Y	CORROSIVE WASTEWATERS FROM ELECTRONICS MANUFACTURING.	A02	M077	40,020	1.00	1.00	0.00	0.00	0.00	99.00	1.050	2.4	1.00
92	PAD002334753	1	2821	Y	D043 CHARACTERISTIC PROCESS WASTEWATER FROM POLYVINYL CH	A04	M123	743,771	0.20	0.20	0.00		0.01	99.00	1.000	7.5	1.00
93	PAD004835146	1	4953	Y	MULTI-SOURCE LEACHATE/GROUNDWATER FROM INACTIVE HAZARDOU	A79	M077	62,525				0.01		99.99	1.020	5.5	0.01
94	PAD059087072	1	4953	Y	MULTI SOURCE LEACHATE GROUNDWATER FROM INACTIVE HAZARDOUS	A79	M077	131,491		0.01		0.00	0.00	99.99	1.020	6.0	0.01
95	PAD980550594	2	2911	Y	PROCESS AND STORMWATER FROM PETROLEUM REFINERY OPERATION	A49	M123	7,800,000	1.00	1.00				98.00	0.999	7.0	2.00
96	PRD090074071	1	2911	Y	TOXICITY CHERACTERISTIC PROCESS WS WATER CONTAINING	A49	M081	832,429		0.00			0.00	99.50	1.000	7.6	0.50
97	SC1890008989	1	9511	Y	F AREA TANK FARM	A75	M122	387,455	45.00	35.00		0.40		55.00	1.260	13.6	45.00
98	SC1890008989	2	9511	Y	H AREA TANK FARM	A75	M122	488,882	45.00	35.00		0.40		55.00	1.310	13.8	45.00
99	TN3890090001	1	2819	Y	NITRIC SOLUTIONS	A94	M137	1,164				0.03			1.000	2.1	
100	TN3890090001	3	2819	Y	CONTAMINATED GROUNDWATER/LEACHATE	A79	M137	9,808		0.01		0.01	0.00		1.000	6.7	
101	TN3890090001	4	2819	Y	LEGACY WASTE TREATMENT SLUDGES	A75	NA	4,256	35.90			0.62	0.52	71.50	1.255	8.9	28.50
102	TND003337292	1	2812	Y	INFLUENT TO WASTEWATER TREATMENT	A92	M077	148,752	1.00	1.00	0.10	0.10	0.10	99.00	1.000	6.0	1.00
103	TND003376928	7	2869	Y	MIXED WASTEWATER		M081	33,334,106							1.000		
104	TND007024672	1	2819	Y	WASH WATER	A59	M073	16,959	2.00	1.00		0.00	0.00	95.00	1.020	11.5	5.00

105	TXD000017756	1	2821	Y	WASTE WATER, INDUSTRIAL CONTAINS ORGANIC COMPOUNDS	A37	M081	1,882,822	3.00	0.50		0.05	0.00	97.00	1.000	6.0	3.00
106	TXD000751172	1	2869	Y	WASTEWATER CONTAINING ACRYLONITRILE	A33	M123	655,210	6.89	0.01		1.87		91.00	1.030	5.9	9.00
107	TXD000836486	1	2879	Y	WASTEWATER, PROCESS	A49	M081	853,984		0.00		0.01		99.00	1.010	7.5	1.00
108	TXD001700806	2	2869	Y	WASTE WATER, INDUSTRIAL CONTAINS ORGANIC COMPOUNDS	A75	M134	102,181							1.220	2.0	
109	TXD001700806	3	2869	Y	WASTEWATER, INDUSTRIAL PROCESS, HYDROCARBON CONTAINING	A89	M134	2,062,029							1.000	4.0	
110	TXD007376700	1	2869	Y	PERCHED WATER, RETREIVED	A69	M083	78,259							1.000		
111	TXD008076853	1	2869	Y	ORGANICS, COMBUSTIBLE & WATER	A31	M041	76,709	0.20	0.16	0.06	2.00	0.10	98.00	0.995	11.7	2.00
112	TXD008079527	2	2869	Y	WASTEWATER, PROCESS	A33	M134	823,274	4.64	0.01		1.06		94.00	1.034	7.8	6.00
113	TXD008079642	1	2821	Y	WATER, CONTAMINATED	A33	M041	964,109							1.000		
114	TXD008081101	1	2869	Y	WASTE WATER, INDUSTRIAL CONTAINS ORGANIC COMPOUNDS	A49	M134	1,130,140		0.01		0.00		86.00	1.600	7.9	14.00
115	TXD008081101	4	2869	Y	ANILINE NITROBENZENE PROCESS	A99	M134	289,649	1.50					98.50	1.020	9.3	1.50
116	TXD008081697	1	2869	Y	WASHWATER, CAUSTIC CONTAINING HYDROCARBONS	A34	M134	79,666		0.00	18.00	1.00	0.00	70.00	1.200	10.0	30.00
117	TXD008081697	2	2869	Y	ACID, ACRYLIC/WATER	A34	M041	67,194	0.00	0.10	0.10	7.00	0.00	85.00	0.980	1.3	15.00
118	TXD008106999	1	2865	Y	SODIUM CARBONATE SOLUTION	A37	M134	254,436							1.000		
119	TXD008106999	2	2865	Y	WASTEWATER CONTAINING ORGANICS, TRACE METALS, AND OIL	A37	M134	45,911							1.000		
120	TXD008106999	4	2865	Y	CONDENSATE	A35	M134	104,936							1.000		
121	TXD048210645	1	2911	Y	WASTEWATER	A99		7,001,587				1.00	1.00	99.00	1.000	8.0	1.00
122	TXD050309012	1	2869	Y	WASTEWATER CONTAINING ORGANICS	A75	M081	5,287,560							1.000		
123	TXD058275769	1	2869	Y	WASTEWATER, INDUSTRIAL PROCESS(DOMESTIC-INDUSTRIAL GRADE	A35	M081	1,820,404							1.000		
124	TXD065096273	1	2869	Y	WASTEWATER, PROCESS	A49	M121	1,748,407		0.10		0.00	0.00	99.90	1.000	2.0	0.10
125	TXD065099160	1	2911	Y	Oil-water emulsion or mixture	A75	M081	4,365,649	1.00	1.00		0.00	0.00	97.99	1.000	7.8	2.01
126	TXD069450278	1	2869	Y	WASTEWATER, INDUSTRIAL PROCESS(DOMESTIC-INDUSTRIAL GRADE	A49	M081	165,665	0.01	0.01		0.01		99.97	1.000	6.0	0.03
127	TXD069450997	1	3674	Y	WASTEWATER, INDUSTRIAL PROCESS(DOMESTIC-INDUSTRIAL GRADE	A04	M121	388,536							1.000		
128	TXD078432457	1	2869	Y	WASTEWATER CONTAINING ORGANICS	A33	M041	200,937						95.00	1.000	2.0	5.00

129	TXD078432457	2	2869	Y	WASTEWATER CONTAINING ORGANICS, TRACE METALS, AND OIL	A33	M134	677,583		0.10		0.30		99.00	1.003	4.5	1.00
130	TXD083472266	1	2869	Y	WASTEWATER, INDUSTRIAL PROCESS(DOMESTIC-INDUSTRIAL GRADE	A33	M081	2,705,288							1.000		
131	TXD980626774	1	2911	Y	WASTEWATER, PROCESS	A49	M091	6,697,020	0.12	0.00	0.00	0.00	0.01	99.00	1.000	7.0	1.00
132	TXD982286932	1	2869	Y	WASTEWATER, PROCESS	A74	M121	122,591		1.00		1.00	0.00	90.00	1.000	2.0	10.00
133	TXT490011293	1	2821	Y	WASTEWATER	A49	M081	625,457	9.00	0.00	0.00	1.00	0.00	91.00	0.999	10.6	9.00
134	WAD041337130	1	3728	Y	WATER CONTAMINATED WITH HEAVY METALS FROM CONVERSION COA	A29	M072	1,209,300	0.00	0.00	0.00	0.00	0.00	99.99	1.000	3.0	0.01
135	WAD041337130	2	3728	Y	WATER CONTAMINATED WITH CYANIDE FROM CONVERSION COATING	A22	M072	2,068	0.00	0.00	0.00	0.00	0.00	99.99	1.000	7.0	0.01
136	WVD004325353	3	2869	Y	Landfill leachate - listed waste from land disposal	A79	M081	40,150	1.00	1.00	1.00			99.00	1.000	8.4	1.00
137	WVD004341491	9	2869	Y	REMEDIATION OF BENZENE PLUME IN GROUNDWATER	A69	M081	402,513	0.00	0.00	0.00	0.00	0.00	100.00	0.995	7.0	0.00
138	WVD004341491	10	2869	Y	SCRUBBER WASTE FROM FLUID BED INCINERATION	A78	M081	378,302	0.20	0.20	0.20	0.00	0.00	99.80	0.995	6.0	0.20
139	WVD005005509	1	2879	Y	Wastewater rendered hazardous by addition of F039	A75	M081	6,259,644							1.000		
140	WVD005005509	4	2879	Y	Wastewater pretreatment at Larvin unit.	A75	M085	103,429							1.000		
141	WVD045875291	2	2821	Y	Corrosive acidic wastewater hydrochloric acid	A37	M121	65,000	0.00					81.40	1.080	1.0	18.60
142	WVD045875291	3	2821	Y	Corrosive acidic wastewater w/sulfuric acid	A19	M121	705,000	0.00					99.40	1.000	1.7	0.60
Summary Statistics:					Column total =			198,064,799									
Datapoints =									78	89	54	79	50	102	142	103	102
Min =									0.00	0.00	0.00	0.00	0.00	31.76	0.980	0.0	0.0
Max =									69.99	35.00	96.00	7.00	1.00	100.00	1.600	14.0	68.2
Mean =									4.47	1.18	3.11	0.43	0.10	95.04	1.031	6.4	5.0
Median =									1.00	0.01	0.05	0.01	0.00	98.90	1.000	6.9	1.1
Tons-weighted average =									2.39	0.59	0.44	0.22	0.14	97.65	1.008	6.0	2.4

**Physical Properties of RCRA Hazardous Industrial Wastewater Sludges**  
**Source: USEPA Office of Solid Waste, 1996 "National Hazardous Waste Constituent Survey" (NHWCS)**  
**NHWCS database query criterion: if waste physical form code = B503, B504, B512, B513, B607 or B608**  
<http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/economic.htm> (See webpage item 4)

Item	EPAID	Waste stream ID nr.	SIC code	Waste physical form code	Industrial Wastewater Description	Source code	System code	1993 quantity managed (tons)	A	B	C	D	E	F	G	H	(100 - F)
									%Solids	%TSS	%Ash	%TOC	%Oil	%H2O	Specific gravity	pH	%Non-H2O
1	IDD073114654	7		B512	REFINERY, THIS REFINERY HAS BEEN OUT OF OPERATION FOR 41	N/A	M132	1,057							1.000		
2	ILD000805812	6	2911	B512		N/A	M132	37,768							1.199		
3	IND000810861	3	2911	B504	DISSOLVED AIR FLOTATION UNIT (AFU) FLOAT GENERATED FROM	A75	M101	48,761	10.00		0.00			90.00	1.000	7.6	10.00
4	IND006050967	1	2833	B607	BIOLOGICAL TREATMENT SLUDGE	A76	M041	1,319		12.50	12.00			83.00	1.200	7.5	17.00
5	IND006050967	9	2833	B607	BIOLOGICAL TREATMENT SLUDGE FOR ONSITE LIQUIDS INCINERA	A76	M041	1,221		12.50	12.00			83.00	1.200	7.5	17.00
6	IND093219012	1	3692	B504	WASTE WATER TREATMENT SLUDGE FROM WASTE TREATMENT	N/A	M111	1,620							1.000		
7	IND093219012	5	3471	B504	WASTEWATER TREATMENT SLUDGE FROM WASTEWATER TREATMENT OF	N/A	M111	3,085							1.000		
8	IND093219012	7	3714	B504	CHROMIUM HYDROXIDE SLUDGE FROM WASTEWATER TREATMENT FROM	N/A	M111	929							1.000		
9	IND093219012	11	3714	B504	F019 WASTEWATER SLUDGE (RQ-1000) FROM CHROMATING & FLUXI	N/A	M111	929							1.000		
10	IND093219012	13	3751	B504	WASTE WATER TREATMENT SLUDGE FROM ELECTROPLATING	N/A	M111	929							1.000		
11	IND093219012	15	2869	B504	PRIMARY SOLIDS (CPI) AND BIOSLUDGE FROM PETROLEUM REFINI	N/A	M111	929							1.000		
12	LAD000777201	10	2911	B504	PRIMARY SLUDGE AND DEBRIS	N/A	M132	5,773							1.250		
13	LAD056024391	2	2911	B503	REFINERY SLUDGE	A49	M124	12,101	8.80				14.70	76.50	1.040	8.1	23.50
14	LAD981057706	16	4953	B503	BIO SLUDGE	N/A	M502	1,506	45.00		12.50			13.00	1.300	10.5	55.00
15	MID005358130	2	2911	B512	SECONDARY SEPARATION SLUDGE FROM PETROLEUM REFINING	A60	M101	1,944	85.00					10.00	1.000	6.0	90.00
16	MID048090633	3	3312	B504	WASTEWATER TREATMENT SLUDGE	N/A	M132	1,816	60.00					40.00	1.000	7.0	60.00

17	NJD002385730	1	2822	B607		A75	M132	35,858	40.00		0.00			40.00	1.200	10.0	60.00
18	NYD980592497	9	3861	B607	SLUDGE FROM WASTEWATER TREATMENT PLANT (HW82)	A75	M125	10,026	26.00		8.00			74.00	1.000		26.00
19	ORD009020231	4	3672	B504	METAL HYDROXIDE SLUDGE FROM WASTEWATER TREATMENT.	N/A	M101	1,008	6.00	1.00	0.00	0.00	0.00	93.00	1.050	8.0	7.00
20	PAD980550594	1	2911	B503	API SEPARATOR SLUDGE	A75	M101	8,087	55.00			5.00		40.00	1.000	10.0	60.00
21	TND003376928	8	2869	B503	BIOLOGICAL SOLIDS		M049	148,355							1.000		
22	TXD007330202	6	2869	B607	OIL AND WATER SLUDGE	A75	M042	29,904	15.00		4.50			85.00	0.950		15.00
23	TXD069452340	1	4953	B504	WASTEWATER TREATMENT SLUDGE	A75	M111	2,672							1.000		
24	TXD980626774	2	2911	B503	WASTEWATER BASIN SLUDGE	A75	M132	1,084	55.00		60.00	5.00		40.00	1.700	7.6	60.00
25	TXD980626774	3	2911	B504	WASTEWATER TREATMENT SLUDGE	A75	M132	2,610	50.00		60.00	5.00		45.00	1.100	7.0	55.00
26	WVD004325353	4	2869	B607	Sludge dewatered - listed wastewater sludge	A76	M132	8,720	22.00	2.00				73.00	1.000		27.00
27	WVD005005509	3	2879	B503	Sludge from the bio treatment of waste water.	A75	M132	16,805							1.000		
Summary Statistics						Column total =		386,817									
Datapoints =									13	4	10	4	2	15	27	12	15
Min =									6.00	1.00	0.00	0.00	0.00	10.00	0.95	6.0	7.0
Max =									85.00	12.50	60.00	5.00	14.70	93.00	1.700	10.5	90.0
Mean =									36.75	7.00	16.90	3.75	7.35	59.03	1.081	8.1	38.8
Median =									40.00	7.25	10.00	5.00	7.35	73.00	1.000	7.6	27.0
Tons-weighted average =									23.94	4.09	3.64	4.61	13.57	69.71	1.044	8.5	30.0

**Summary of USEPA Clean Water Act “Categorical Pretreatment Standards”  
for “Indirect Discharge” of Industrial Wastewaters to POTWs (publicly-owned [sewage] treatment works)  
Non-Manufacturing Industrial Categories Are Shaded Below  
(Source: USEPA Office of Water, July 2002 list of standards published as of year 2001)**

Item	40 CFR Part	Industrial Category	Publication Date	Existing Source Compliance Date	New Source Date	Industry Identity Code		1997 US Economic Census
						SIC code	NAICS code	Count of Establishments*
1	467	Aluminum Forming	10/24/83	10/24/86	11/22/82	3334, 3353, 3354, 3355, 3363, 3365	331312, 331315, 331316, 331319, 331521, 331524	1,215
2	461	Battery Manufacturing	3/9/84	3/9/87	11/10/82	3691, 3692	335911, 335912	182
3	431	Builders' Paper and Board Mills	11/18/82	7/1/84	Unknown	2631	322130	217
4	458	Carbon Black Manufacturing	1/9/78	NA (NS only)	5/18/76	2895	325182	22
5	437	Centralized Waste Treatment	12/22/00	12/22/03	8/28/00	4941, 4952	221310, 221320	4,748
6	465	Coil Coating I	12/1/82	12/1/85	1/12/81	3479	332812	2,206
7	465	Coil Coating II (Canmaking)	11/17/83	11/17/86	2/10/83	3411	332431	274
8	444	Commercial Hazardous Waste Combustors	1/27/00	1/27/03	2/6/98	4953	562211	150
9	468	Copper Forming	8/15/83	8/15/86	11/12/82	3331, 3351, 3366	331411, 331421, 331525	457
10	469	Electrical and Electronic Components I (Subparts A & B)	4/8/83	7/1/84 (TTOs) 11/8/85 (arsenic)	8/24/82	36	334, 335	17,104
11	469	Electrical and Electronic Components II	12/14/83	7/14/86	3/9/83			
12	413	Electroplating	1/28/81 (several amendments)	4/27/84 (non-integrated facilities) 6/30/84 (integrated facilities) 7/15/86 (TTOs)	NA	3471	332813	3,404
13	412	Feedlots	2/14/74	NA (NS only)	9/7/83	0211, 0213, 0214, 0219, 0241, 0251, 0252, 0253 (livestock wholesale trade 5154 used as proxy)	422520	2,090
14	418	Fertilizer Manufacturing	4/8/74 (A-D) 1/16/76 (E) 1/14/75 (F-G)	NA (NS only)	12/7/73 (A-D) 3/16/76 (E) 10/7/74 (F-G)	2873, 2874, 2875	325311, 325312, 325314	653
15	426	Glass Manufacturing	1/22/74	NA (NS only)	8/22/73 (A)10/17/73 (B-D,E,G) 8/21/74 (K-M)	3211, 3221, 3229	327211, 327212, 327213	613
16	406	Grain Mills	3/20/74	NA (NS only)	12/4/73	5153	422510	6,569
17	447	Ink Formulating	7/28/75	NA (NS only)	2/26/75	2893	325910	567

**Summary of USEPA Clean Water Act “Categorical Pretreatment Standards”  
for “Indirect Discharge” of Industrial Wastewaters to POTWs (publicly-owned [sewage] treatment works)  
Non-Manufacturing Industrial Categories Are Shaded Below  
(Source: USEPA Office of Water, July 2002 list of standards published as of year 2001)**

						Industry Identity Code		1997 US Economic Census
Item	40 CFR Part	Industrial Category	Publication Date	Existing Source Compliance Date	New Source Date	SIC code	NAICS code	Count of Establish- ments*
18	415	Inorganic Chemicals I	7/20/77 (Interim Final Rule) 6/29/82 (Phase I)	7/20/80 (A, B, L, AL, AR, BA, BC) 6/29/85 (subparts not listed above or below, including NiSO <sub>4</sub> and CuSO <sub>4</sub> )	7/24/80 (subparts not listed below, including NiSO <sub>4</sub> and CuSO <sub>4</sub> processes)	2816, 2819	3251	1,410
19	415	Inorganic Chemicals II	8/22/84	8/22/87 (AJ [except NiSO <sub>4</sub> ], AU [excpet CuSO <sub>4</sub> ], BL, BM, BN, BO)	10/25/83 (Subparts T, AA, AC, AE, AI, AJ [except CuSO <sub>4</sub> processes], AL, AN, AQ, AR, AU [except NiSO <sub>4</sub> processes], AX, BC, BH, BK, BL, BM, BN, BO)			
20	420	Iron and Steel Manufacturing	5/27/82	7/10/85	1/7/81	331, 332	331	2,098
21	425	Leather Tanning and Finishing	7/23/82	11/25/85 3/31/89 (C)	7/2/79 1/21/87 (C)	3111	316110	332
22	433	Metal Finishing	7/15/83	6/30/84 (for interim level TTOs; 7/10/85 for plants also subject to iron & steel) 2/15/86 (more stringent TTO & all others)	8/31/82	3471, 3479	332812, 332813	5,610
23	464	Metal Molding and Casting	10/30/85	10/31/88	11/15/82	336, 339	3315	2,731
24	471	Nonferrous Metals Forming and Metal Powders	8/23/85	8/23/88	3/5/84	3341	331314	256
25	421	Nonferrous Metal Manufacturing	3/8/84 (B-I, K-M) 7/17/87 (J) 9/20/85 (N- AE)	3/9/87 (C, F-M) 2/22/88 (J) 9/20/88 (P,Q,V,X,Y,AA-AC)	2/17/83 (B-I, K-M, except molybdenum acid plants[I]) 1/22/87 (J) 6/27/84 (Mo acid plants [I] & N-AE)	333, 334, 335, 336	331	3,122
26	414 & 416	Organic Chemicals, Plastics, and Synthetic Fibers	11/5/87	11/5/90	3/21/83	2821, 2824, 2865, 2869, 308	325110, 325132, 325211, 325222, 3261	15,624
27	446	Paint Formulating	7/28/75	NA (NS only)	2/26/75	2851	325510	1,488
28	443	Paving and Roofing Materials	7/28/75	NA (NS only)	1/10/75	295	324121, 324122	1,425

**Summary of USEPA Clean Water Act “Categorical Pretreatment Standards”  
for “Indirect Discharge” of Industrial Wastewaters to POTWs (publicly-owned [sewage] treatment works)  
Non-Manufacturing Industrial Categories Are Shaded Below  
(Source: USEPA Office of Water, July 2002 list of standards published as of year 2001)**

						Industry Identity Code		1997 US Economic Census
Item	40 CFR Part	Industrial Category	Publication Date	Existing Source Compliance Date	New Source Date	SIC code	NAICS code	Count of Establish- ments*
29	455	Pesticide Chemicals Formulating, Packaging, and Repackaging	11/16/96	11/6/99 (C&E)	4/14/94	2879	325320	260
30	419	Petroleum Refining	10/18/82	12/1/85	12/21/79	2911	324110	242
31	439	Pharmaceuticals Manufacturing	10/27/83 (cyanide) 9/21/88 (other parameters)	10/27/86 (cyanide) 9/21/01 (other parameters)	11/26/82 (cyanide) 5/2/95 (others)	2833, 2834	325411, 325412	1,145
32	466	Porcelain Enameling	11/24/82	11/25/85	2/27/81	326	3271	1,198
33	430	Pulp, Paper, and Paperboard	11/18/82 (original) 4/15/98 (revision)	7/1/84 (A,C,D, F-L) 4/15/01 (B,E)	1/6/81 (A,C,D, F-L) 12/17/93 (B,E)	26	322	6,496
34	428	Rubber Manufacturing	1/10/75	NA (NS only)	8/23/74	2822	325212	143
35	417	Soap and Detergent Manufacturing	4/12/74 (Q) 6/30/75 (O,P,R)	NA (NS only)	12/26/73(Q) 2/20/75 (O,P,R)	2841	325611	799
36	423	Steam Electric Power Generating	11/19/82	7/1/84	10/14/80	4911	221112, 221113, 221119	1,158
37	409	Sugar Processing	1/31/74	NA (NS only)	Unknown	2061, 2062, 2063	311311, 311312, 311313	93
38	429	Timber Products	1/26/81	1/26/84	10/31/79	24	321	36,735
39	442	Transportation Equipment Cleaning	8/14/00	8/14/03	6/25/98	4789	488999	1,289
Total establishments (estimated non-duplicative count) =								122,000
Total non-manufacturing establishments =								16,004 (13%)
Explanatory Notes:								
(a) * Source: 1997 US Economic Census website: <a href="http://www.census.gov/epcd/www/econ97.html">http://www.census.gov/epcd/www/econ97.html</a>								

**Count of Industrial Facilities Which Have Clean Water Act "Direct Discharge" Water Permits**  
**(Source: USEPA Office of Waster "Permit Compliance System" database queries\* as of 11 July 2002 update)**

SIC codes	Economic Sector	Count* of facilities with CWA direct discharge permits	Subtotal Count* of Facilities for RCRA Hazardous Waste F001 to F005 "Headworks Exemption" Spent Solvent Chemicals (listed below by chemical name & PCS parameter code)																	
			Considered Additional "Headworks" Spent Solvents (n=4)				Spent Solvents from the 1981 RCRA "Headworks Exemption" (n=16)													
			Benzene	2-ethoxy-ethanol	1,1,2-trichloroethane	2-nitropropane	1,1,1-trichloroethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorofluorocarbon solvents	Cresols	Cresylic acid	Orthodichlorobenzene	Isobutanol	Methyl ethyl ketone	Methylene chloride	Nitrobenzene	Pyridine	Tetrachloroethylene
			34030	81685	34511	None	34506	77041	32102	34301	Multiple**	77146, 79778, 81676	None	None	77033	81595	34423	34447	77045	34475
0x	Agriculture	3,107	3	0	0	0	Non-manufacturing data not collected in this document for these table columns													
10 to 14	Mining	4,322	50	0	2	0														
15 to 17	Construction	5,509	27	0	1	0														
2x to 3x	Manufacturing	17,328	618	1	362	0	543	9	385	361	61	14	0	0	2	23	450	316	4	499
4x	Transportation & Utilities	29,605	805	0	259	0	Non-manufacturing data not collected in this document for these table columns													
5x	Wholesale Trade	6,135	1,121	0	7	0														
6x	Finance, Insurance & Real Estate	4,075	14	0	6	0														
7x to 8x	Services	6,670	73	0	26	0														
91 to 97	Public Administration	2,017	244	0	16	0														
9999	Non-Classifiable Establishments																			
Column totals =		78,768	2,955	1	679	0	1,026	15	811	752	150	26	0	0	3	46	941	614	6	1,263
Non-manufacturing subtotals =		61,440 (78%)	2,337	0	317	0	483	6	426	391	89	12	0	0	1	23	491	298	2	764

Explanatory Notes:

(a) \* Counts of CWA direct discharge permits in this table from the USEPA Office of Water PCS query website: [http://www.epa.gov/enviro/html/pcs/pcs\\_query\\_java.html](http://www.epa.gov/enviro/html/pcs/pcs_query_java.html)

(b) \*\* Count for "chlorofluorocarbons" based on estimated non-duplicative facility count for 16 relevant chemical codes in the PCS database (34488, 34668, 38671, 38674, 38675, 45025, 45028, 49541, 70010, 77647, 77652, 78143, 81611, 82637, 85667, 85668).

**Summary Count of Industrial Facilities With Clean Water Act Permits  
for Industrial Wastewater Discharge (Indirect + Direct)  
(source: summary of data presented in prior two tables)**

Item	Economic Sector	SIC code	NAICS code	1997 US total count of establishments*	Count of Facilities With CWA Wastewater Discharge Permits		
					CWA indirect discharge permits	CWA direct discharge permits	Total CWA discharge permits
1	Agriculture	0x	11	2,190,510	2,090	3,107	5,197
2	Mining	10 to 14	21	25,000	0	4,322	4,322
3	Construction	15 to 17	23	656,434	0	5,509	5,509
4	Manufacturing	2x to 3x	31 to 33	377,776	106,000	17,328	123,328 (33% of total mfg)
5	Transportation & Utilities	4x	22, 48, 49, 562	293,575	7,345	29,605	36,950
6	Wholesale Trade	5x	42	521,127	6,569	6,135	12,704
7	Finance, Insurance & Real Estate	6x	52, 53	1,561,195	0	4,075	4,075
8	Services	7x to 8x	51, 54, 55, 561, 61, 62, 71, 72, 81	2,739,054	0	6,670	6,670
9	Public Administration	91 to 97	92	48,193	0	2,017	2,017
10	Non-Classifiable Establishments	9999	None				
Column totals =				8,396,163	122,000	78,768	198,768
Non-manufacturing subtotals =				8,018,387	16,004 (13%)	61,440 (78%)	<b>77,444 (39%)</b>

**Explanatory Notes:**

- (a) \*1997 agriculture sector total count of establishments from the US Dept of Agriculture, Agricultural Statistics Board, Statistical Bulletin Nr. 955, Jan 1999:  
<http://usda.mannlib.cornell.edu/usda/reports/general/sb/b9550199.pdf>.
- (b) 1997 non-agriculture sectors total count of establishments from the US Dept of Commerce, Bureau of Census "1997 Economic Census":  
<http://www.census.gov/epcd/ec97sic/E97SUS.HTM>

**Count of Industrial Facilities Grouped According to Manufacturing & Non-Manufacturing SIC Codes**  
**Which Onsite Generate & Manage F- and/or K-Listed RCRA Hazardous Wastes**  
**Source: USEPA Office of Solid Waste 1996 "National Hazardous Waste Constituent Survey" Database**  
<http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/economic.htm> (see webpage item 4)

Item	SIC Code	Count of NHWCS Facilities	Industry Group	1993 Tons of F- or K- Listed Wastes Managed	Item	SIC Code	Count of NHWCS Facilities	Industry Group	1993 Tons of F- or K-listed Wastes Managed
1	Not provided	27	Unknown	251,364	67	3496	1	Manufacturing	16,248
2	0051	1	Non-mfg	781	68	3499	1	Manufacturing	2,450
3	1794	1	Non-mfg	4,256	69	3519	3	Manufacturing	5,755
4	2048	6	Manufacturing	14,349	70	3534	1	Manufacturing	5
5	2295	1	Manufacturing	2,080	71	3571	1	Manufacturing	445,193
6	2491	5	Manufacturing	32,069	72	3572	1	Manufacturing	346
7	2511	1	Manufacturing	15	73	3573	1	Manufacturing	431
8	2514	1	Manufacturing	1,057	74	3612	1	Manufacturing	1,251
9	2522	3	Manufacturing	3,318	75	3613	1	Manufacturing	379
10	2531	1	Manufacturing	2,504	76	3625	1	Manufacturing	3,040
11	2645	1	Manufacturing	2,493	77	3644	1	Manufacturing	485
12	2671	2	Manufacturing	6,592	78	3661	1	Manufacturing	3,040
13	2672	2	Manufacturing	5,776	79	3662	1	Manufacturing	4,628
14	2754	3	Manufacturing	3,620	80	3672	2	Manufacturing	6,631
15	2782	1	Manufacturing	4,511	81	3673	1	Manufacturing	39
16	2795	1	Manufacturing	23	82	3674	2	Manufacturing	2,816
17	2812	2	Manufacturing	1,241,113	83	3679	1	Manufacturing	99
18	2816	2	Manufacturing	4,789	84	3692	1	Manufacturing	1,620
19	2819	13	Manufacturing	689,278	85	3694	1	Manufacturing	2,493
20	2821	21	Manufacturing	2,074,352	86	3695	2	Manufacturing	2,615
21	2822	3	Manufacturing	591,801	87	3711	8	Manufacturing	21,042

22	2830	3	Manufacturing	7,036	88	3713	1	Manufacturing	2
23	2833	11	Manufacturing	808,559	89	3714	4	Manufacturing	117,853
24	2834	11	Manufacturing	42,332	90	3721	5	Manufacturing	192,124
25	2842	4	Manufacturing	30,686	91	3724	3	Manufacturing	5,093
26	2843	1	Manufacturing	4,749	92	3728	2	Manufacturing	4,409
27	2844	1	Manufacturing	303	93	3732	1	Manufacturing	17
28	2850	3	Manufacturing	4,400	94	3743	1	Manufacturing	25
29	2851	20	Manufacturing	86,526	95	3751	1	Manufacturing	929
30	2865	10	Manufacturing	54,983	96	3764	1	Manufacturing	481,768
31	2869	52	Manufacturing	49,606,232	97	3795	1	Manufacturing	1,352
32	2870	3	Manufacturing	12,945	98	3811	1	Manufacturing	2,237
33	2873	1	Manufacturing	1,086	99	3861	3	Manufacturing	30,435
34	2879	13	Manufacturing	6,476,763	100	3963	1	Manufacturing	4,066
35	2891	1	Manufacturing	2,439	101	3995	1	Manufacturing	3,293
36	2893	1	Manufacturing	4,282	102	4153	1	Non-mfg	24
37	2898	1	Manufacturing	448	103	4212	3	Non-mfg	3,924
38	2899	4	Manufacturing	11,269,878	104	4214	5	Non-mfg	34,320
39	2911	34	Manufacturing	8,525,493	105	4225	1	Non-mfg	1,816
40	2992	7	Manufacturing	95,134	106	4226	1	Non-mfg	3,161
41	2999	4	Manufacturing	39,665	107	4911	2	Non-mfg	5,595
42	3079	1	Manufacturing	454	108	4953	45	Non-mfg	854,723
43	3089	2	Manufacturing	815	109	5013	1	Non-mfg	1,433
44	3241	7	Manufacturing	98,820	110	5084	1	Non-mfg	18
45	3291	2	Manufacturing	2,083	111	5085	2	Non-mfg	2,917
46	3312	13	Manufacturing	200,430	112	5093	3	Non-mfg	5,389
47	3315	4	Manufacturing	22,510	113	5161	5	Non-mfg	4,346

48	3317	1	Manufacturing	1,173	114	5171	1	Non-mfg	2
49	3334	6	Manufacturing	78,775	115	5172	1	Non-mfg	1,433
50	3341	2	Manufacturing	5,286	116	7216	1	Non-mfg	5,737
51	3353	1	Manufacturing	4,256	117	7353	1	Non-mfg	2,025
52	3354	1	Manufacturing	3,040	118	7389	27	Non-mfg	244,639
53	3411	2	Manufacturing	374	119	7391	1	Non-mfg	23
54	3412	1	Manufacturing	3	120	7392	1	Non-mfg	4,841
55	3425	1	Manufacturing	1,015	121	7399	12	Non-mfg	57,006
56	3429	3	Manufacturing	5,516	122	7532	1	Non-mfg	8,927
57	3442	1	Manufacturing	2,493	123	8062	1	Non-mfg	2
58	3443	1	Manufacturing	2,493	124	8221	7	Non-mfg	16,806
59	3452	1	Manufacturing	3,179	125	8731	1	Non-mfg	488
60	3469	2	Manufacturing	21,475	126	8999	2	Non-mfg	26,027
61	3471	6	Manufacturing	33,472	127	9532	1	Non-mfg	4,703
62	3479	5	Manufacturing	4,848	128	9711	6	Non-mfg	460,752
63	3480	1	Manufacturing	188	129	9999	10	Non-mfg	45,813
64	3482	1	Manufacturing	107,777	Column totals (w/SIC codes) =		527		85,581,399
65	3489	2	Manufacturing	60,142	Non-mfg subtotal =		146		1,801,926
66	3490	1	Manufacturing	971	Percentage non-mfg =		28%		2%

**National Response Center**  
**Chemical Spill Reporting Database Query Findings**  
**for Spills Involving RCRA Hazardous Wastes (1990 to July 2002)**  
**Database search term in "Material Name" datafield: %RCRA% (% symbol signifies search wildcard)**  
**Source: <http://www.nrc.uscg.mil>**

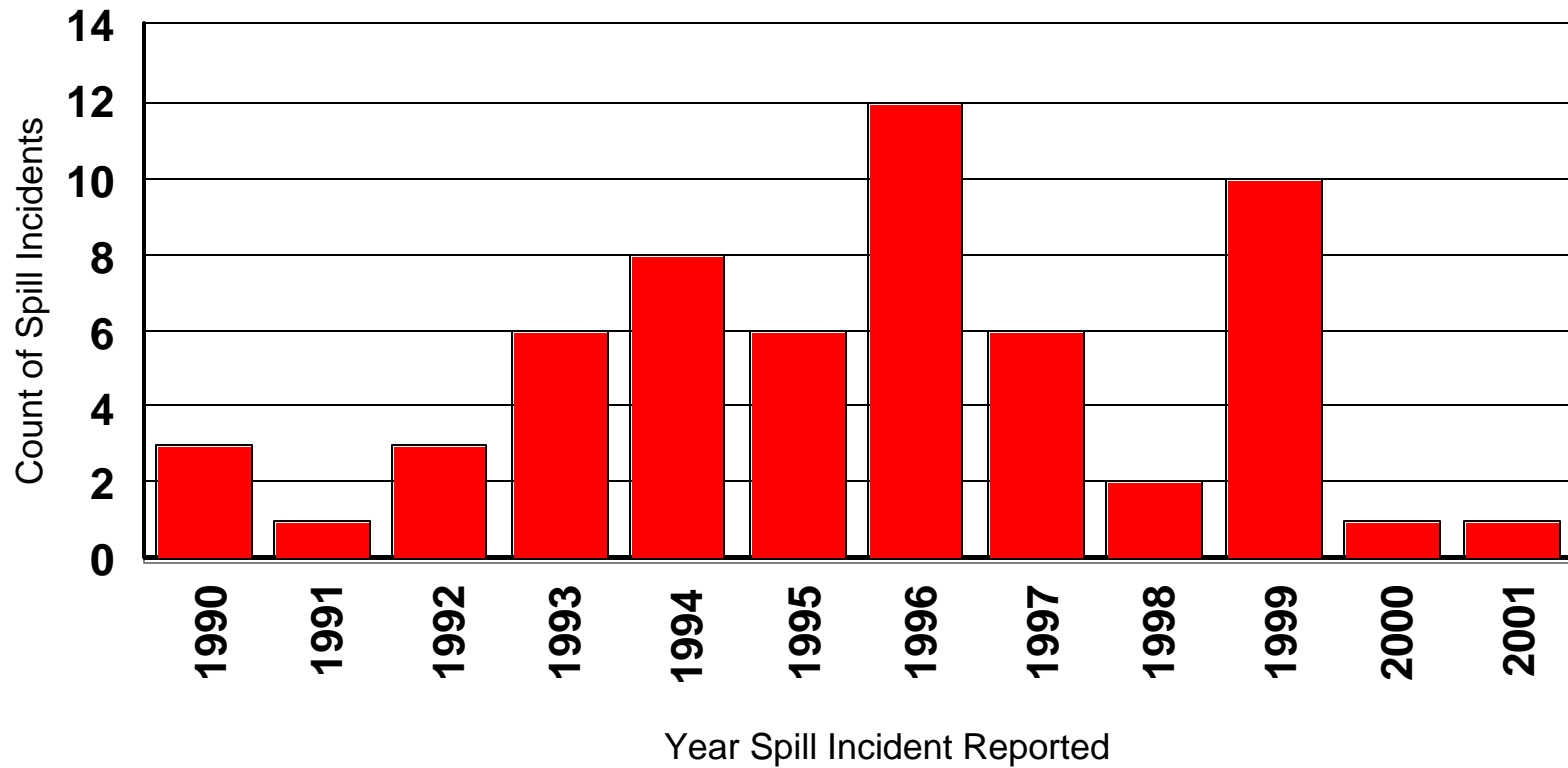
Item	NRC report nr.	Spill incident date	Spill location			Suspected responsible company	Type of spill incident	Medium affected	Type of spilled material (material name)	Quantity spilled	
			Street	City & State						NRC database metric	OSW standardized to tons*
1	8860	02/18/1990	NEAR NAUSHUN ISLAND	Taft	La	Union Carbide	Fixed	Land	ISO-BUTYL ACRYLATE RCRA WASTE	114 lbs	0.057
2	15437	04/02/1990	AL HWY 17MM 163COMPANY FACILITY	Emelle	Al	Chemical Waste Management	Mobile	Land	D008 RCRA WASTE RUNOFF (LEAD)	1 gal	0.004
3	41359	09/27/1990	POB 1RT. 114	Radford	Va	Hercules Inc.	Fixed	Land	KO44 SLUDGE RCRA HAZ WASTE	40 lbs	0.020
4	86557	09/01/1991	RILEY RD	Jay	Me	International Paper	Fixed	Land	BLACK LIQUOR/ RCRA D002/D003	30 gal	0.125
5	138077	09/23/1992	ELMENDORF AFB	Anchorage	Ak	Wolverine Supply Inc	Fixed	Land	RCRA CONTAMINATED MATERIALS	Unknown	
6	140482	10/13/1992	NO. 7 MOBILE AVE	Sauget	Il	Trade Waste Incineration	Fixed	Land	RCRA HAZ WASTE F001	1 gal	0.004
7	141526	10/21/1992	474 W 900 N	Salt Lake City	Ut	Amoco Oil Co	Fixed	Land	RCRA CODE D018 (WATER AND BENZENE)	30,000 gal	125.1
8	153082	01/13/1993	STATE ROUTE 66BLDG NO.132	Newburgh	In	Aluminum Co of America	Mobile	Land	RCRA F005/RQ WASTE PAINT RELATED MATERIA	12 gal	0.050
9	158497	02/16/1993	2555 WILLOW RD	Arroyo Grande	Ca	Unocal	Fixed	Land	HAZWASTE RCRA F-037	100 lbs	0.050
10	165506	04/03/1993	STATE ROUTE 168JJ SPUR S RIVER	Hannibal	Mo	American Cyanamid	Pipeline	Land	RCRA WASTE(D028)	500 gal	2.085
11	176112	05/25/1993	3905 ROUTE 75	St. Gabriel	La	Ciba-geigy Corp.	Fixed	Air	ORGANIC WASTE FROM RCRA FACILITY	2.3 lbs	0.001
12	179785	06/11/1993	BOX 817	Hannibal	Mo	American Cyanamid	Mobile	Land	RCRA WASTE	20 gal	0.083
13	193352	08/18/1993	3.5 MI W OF TAYLORS BAYOUON HWY 73	Port Arthur	Tx	Chemical Waste Management	Fixed	Land	RCRA BLOWDOWN WATER	Unknown	
14	232850	04/01/1994	805 MILL ROAD	Lewiston	Id	Potlatch Inc	Fixed	Land	WEAK WASH (RCRA WASTE D002)	1,000 lbs	0.500
15	239461	05/14/1994	805 MILL RD	Lewiston	Id	Potlatch Corp	Fixed	Land	RCRA WASTE D002-WHITE LIQUER	9,360 lbs	4.680

16	263916	10/04/1994	805 MILL ROAD	Lewiston	Id	Potlatch Corp	Fixed	Land	RCRA WASTE D002	2,500 gal	10.425
17	265858	10/18/1994	CHEMICAL WASTE MGMTHWY 17 N MILE MARKER 163	Emelle	Al	J.B. Hunt	Mobile	Land	RCRA INCINERATOR ASH	5 gal	0.021
18	269898	11/15/1994	805 MILL RD	Lewiston	Id	Potlatch Corp	Fixed	Land	RCRA WASTE D002	25,020 lbs	12.510
19	270218	11/17/1994	(null)	Eastford	Ct	Buehls Greenhouse	Fixed	Air	RCRA WASTE	Unknown	
20	270748	11/23/1994	2400 SOUTH GRAND VIEW AVEPOB 3986	Odessa	Tx	Rexene Corp	Fixed	Land	RCRA WASTE-D018	7 gal	0.029
21	271410	11/30/1994	501 NICHOLS ROADCONTAINED WITHINWASTE TREATMENT PLANT	Pittsburg	Ca	General Chemical Corp.	Fixed	Water	RCRA U134(<1% FLUORIDE)	5 gal	0.021
22	289292	04/29/1995	805 MILL ROADBOX 1016	Lewiston	Id	Potlatch Company	Fixed	Unknown	RCRA WASTE D002/HIGH PH	5,005 gal	20.871
23	297131	06/26/1995	3150 HWY JJ	Palmyra	Mo	American Cyanamid	Fixed	Land	RCRA WASTE (WATER MIXTURE)	10 gal	0.042
24	302818	08/04/1995	1 GENERAL ST	Wabash	In	Jencorp	Fixed	Land	F005,D035,D001 RCRA WASTES	50 gal	0.209
25	312384	10/29/1995	RTE 168 AND JJ SPUR	Hannibal	Mo	American Cyanamid	Fixed	Land	RCRA WASTE DO28	500 gal	2.085
26	313601	11/09/1995	FM 2917	Alvin	Tx	Monsanto Co	Fixed	Land	RCRA WASTE WATER	5 gal	0.021
27	316235	12/05/1995	12555 CLAYTON BLVD	Rosemont	Mn	Koch Refining Co	Fixed	Land	DAF FLOAT (K048 LISTED RCRA HAZ WASTE)	75 lbs	0.038
28	327307	02/22/1996	STATE RT 168 ANDJJ SPUR	South River	Mo	American Cyanamid	Fixed	Land	LIQUID WASTE RCRA - D001	2 gal	0.008
29	331572	03/16/1996	RR3 BOX 69-6REGENERATION UNIT	Pryor	Ok	Elf Atochem Na Inc.	Fixed	Unknown	REGENERATED RCRA WASTES	Unknown	
30	337280	04/18/1996	300 HWY 361BUILDING 3260CODE 095	Crane	In	Usn-crane Div/warfare Ctr	Fixed	Water	SEDIMENT / RCRA REGULATED UNIT / PERMIT OPEN DETL.	Unknown	
31	345603	06/06/1996	INTERSECTION OF HIGHWAY288B AND HIGHWAY 332	Freeport	Tx	Dow Chemical Com.	Fixed	Air	KO17 RCRA WASTE (HEAVY'S FM EPICHLOROHYDRIN PRODUC	840 lbs	0.420
32	358780	08/29/1996	12555 CLAYTON BLVDWASTE WATER TREATMENTPLANT	Rosemount	Mn	Koch Refining Company	Fixed	Land	DAF FLOAT (K048 RCRA WASTE)	5 gal	0.021
33	360813	09/11/1996	PO BOX 77303801 S. OLIVER	Wichita	Ks	Boeing Company	Fixed	Water	HAZARDOUS WASTE/ "F" LISTED RCRA WASTE	100,000 gal	417.0

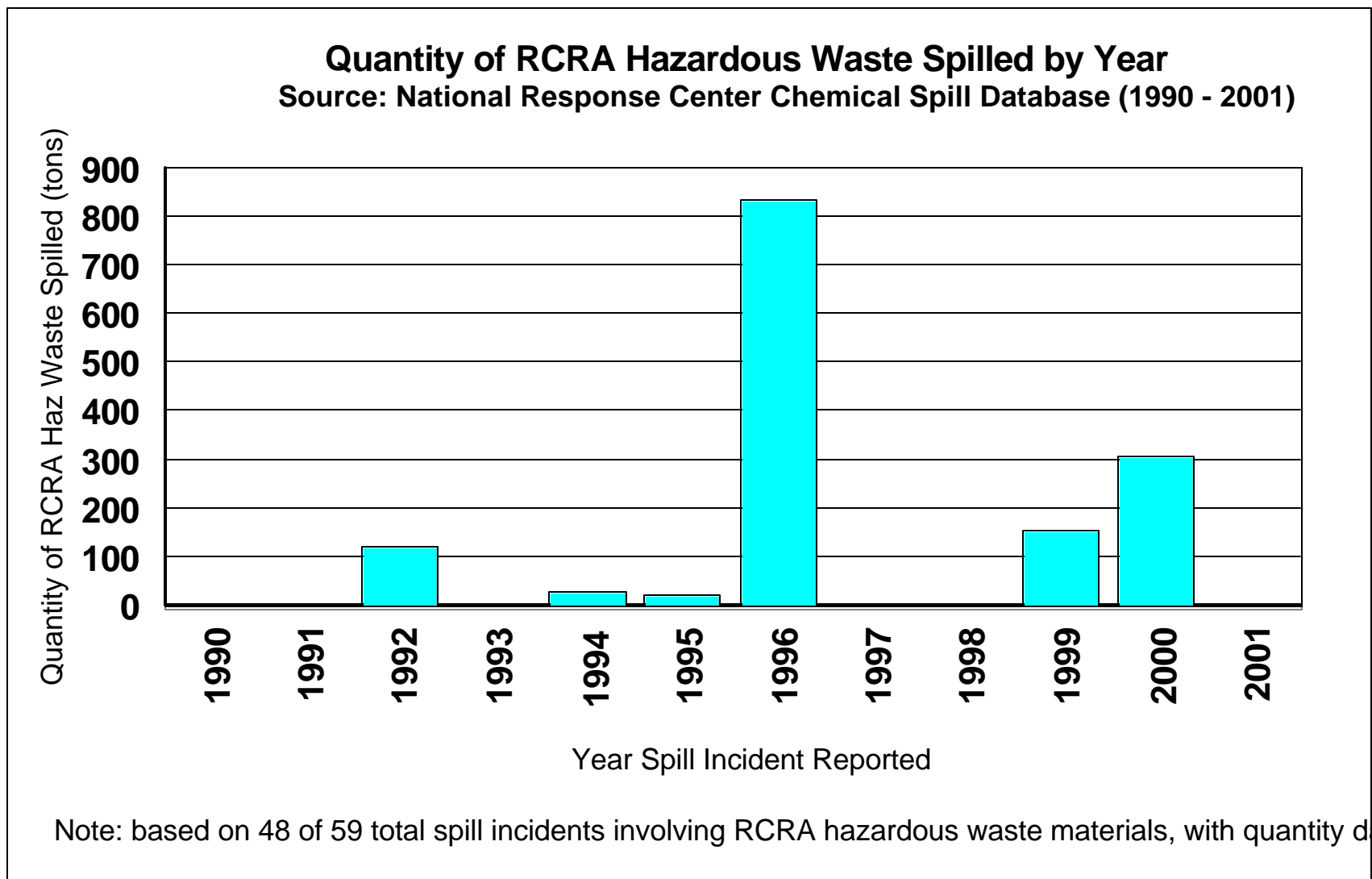
34	360817	09/11/1996	PO BOX 77303801 S. OLIVER	Wichita	Ks	Boeing Company	Fixed	Water	HAZARDOUS WASTE/ "F" LISTED RCRA WASTE	100,000 gal	417.0
35	362267	09/23/1996	1421 STATE ST	Bridgeport	Ct	Westinghouse Electric Cor	Fixed	Unknown	SEDIMENT FROM SEWER SYSTEM (DERIVED FROM F001 RCRA	3,800 lbs	1.900
36	364064	10/11/1996	47 MAIN ST	Midland	Mi	Dow Chemical	Fixed	Water	RCRA CHARACTERISTIC WASTE (BRINE STREAM PH 12.9)	428 lbs	0.214
37	366689	11/05/1996	2810 GULF STATES	Beaumont	Tx	Elf Atochem	Fixed	Land	RCRA WASTE-D001,D003,D018(BENZE NE)	0.5 gal	0.002
38	371393	12/25/1996	2810 GULF STATES	Beaumont	Tx	Elf Atochem	Fixed	Land	SOUR WATER/RCRA CODE D001, D003, D018	60 gal	0.250
39	371639	12/28/1996	HWY 169 NORTH	Coffeyville	Ks	Aptus	Fixed	Land	COOLING TOWER BRINE WATER (RCRA CODES)	Unknown	
40	372241	01/04/1997	3400 EAST 2ND STREET	Benicia	Ca	Exxon Benicia Refinery	Fixed	Water	WATER WITH BENZENE(RCRA CODE: D018)	Unknown	
41	372242	01/04/1997	3400 EAST 2ND STREET	Benicia	Ca	Exxon Benicia Refinery	Fixed	Water	PRIMARY SLUDGE(RCRA CODE: F037)	Unknown	
42	373582	01/19/1997	US HGW 60AND STATE HGW 123 INT	Bartlesville	Ok	Phillips Petroleum Co	Fixed	Land	D0001 RCRA WASTE , CYCLOHEXANE	1,200 lbs	0.600
43	383034	04/08/1997	11600 N APTUS RD	Aragonite	Ut	Aptus Inc	Fixed	Land	WATER CONTAMINATED WITH RCRA CODED WASTES	100 gal	0.417
44	389798	06/03/1997	1600 NE OLD SALEM RD	Albany	Or	Whah Change	Unknown Sheen	Land	DOO2(RCRA WASTE CORROSIVE WATER)	Unknown	
45	414837	12/08/1997	FIRM DELIVERY PENUELASROAD 127, KM 17.3	Penueelas	Pr	Union Carbide, Inc	Fixed	Land	RCRA WASTE K022	8.3 lbs	0.004
46	461644	10/28/1998	10800 RIVER ROAD	Westwego	La	Cytec Industries	Fixed	Land	WASTEWATER (CONTAINING RCRA WASTE K013)	100 gal	0.417
47	468576	12/22/1998	2768 N. US 45 ROAD	Metropolis	Il	Allied Signal	Fixed	Land	RCRA CORROSIVE WASTE(WEAK POTASSIUM HYDROXIDE SOLUTION)	106 lbs	0.053
48	470024	01/07/1999	PEORIA AVE / 600 YARDSNORTH OF LITCHFIELD RD	Glendale	Az	Usaf - Luke Base	Aircraft	Land	HYDRAZENE (RCRA 133)	1 lb	0.001
49	472094	01/28/1999	2571 FITE RD	Memphis	Tn	Dupont	Pipeline	Land	RCRA WASTE WATER	35,000 gal	145.95
50	479864	04/09/1999	4001 PHILADELHIA	Claymont	De	Citi Steel USA	Fixed	Air	BAGHOUSE DUST (RCRA WASTE K061)	30 lbs	0.015

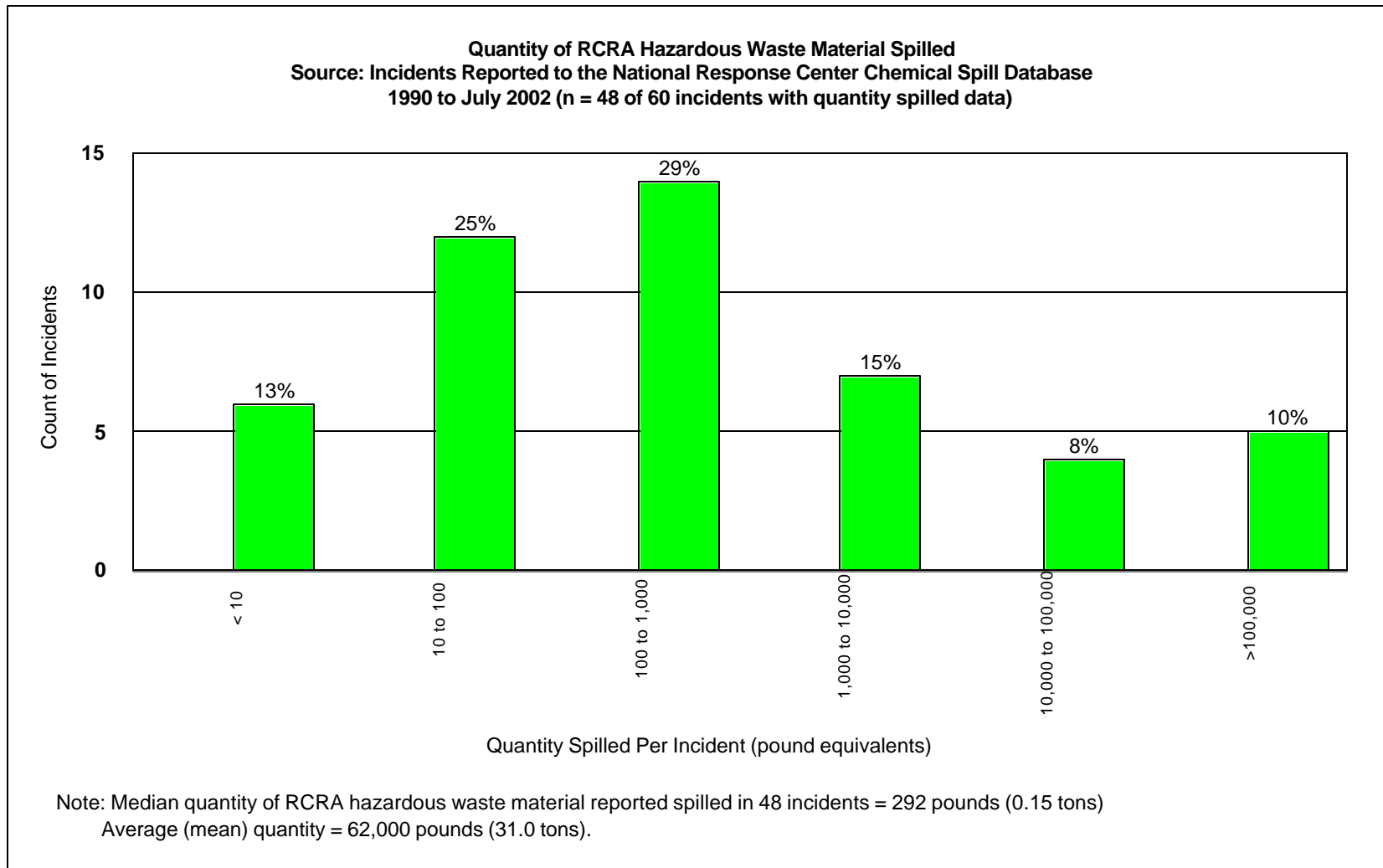
51	488930	06/23/1999	SAFETY KLEEN(BUTTONWILLOW) INC2500 LOKERN RD	Buttonwillow	Ca	Safety Kleen	Fixed	Air	NON RCRA HAZ WASTE SOLID	Unknown	
52	496664	08/25/1999	5500 UP RIVER ROAD	Corpus Christi	Tx	Encycle/texas	Fixed	Air	F006 HAZARDOUS WASTE (RCRA)	132 lbs	0.066
53	499142	09/17/1999	2571 FITE RD	Memphis	Tn	Dupont	Fixed	Water	RCRA COROSSIVE WASTE WATER; LOW PH	1,170 gal	4.879
54	502723	10/18/1999	9651 WESTOVER HILLS BLVD	San Antonio	Tx	Vlsi/phillips Semi Conduc	Fixed	Water	RCRA WASTEWATER	1,863 gal	7.769
55	503351	10/22/1999	GROWS LANDFILL	Unknown	Pa	Chevron Products Co	Unknown Sheen	Land	F037 (PRIMARY SLUDGE UNDER RCRA)	Unknown	
56	507359	11/30/1999	3150 HWY JJC INCINERATOR	Palmyra	Mo	American Cyanamid	Pipeline	Land	RCRA WASTE / CHARACTERISTIC WASTE D004	150 gal	0.626
57	516074	12/18/1999	VACANT LOT3120 HIGH STREET	Oakland	Ca	N/A	Fixed	Land	NO CHRIS CODE (RCRA WASTE CODE D008)	Unknown	
58	517469	01/11/2000	3200 EAST 2ND STREET	Benicia	Ca	Exxon / Mobile Corporation	Fixed	Water	D018 RCRA WASTE WATER	75,000 gal	312.75
59	556763	02/14/2001	WASTE DISPOSAL FACILITY35251 OLD SKYLINE RD	Kettleman	Ca	Chemical Waste Management Inc	Fixed	Land	RCRA CODE: F006 (SLUDGE CONTAINING METALS)	2 gal	0.008
60	613444	06/26/2002	AGRICULTURAL CHEMICAL PLANT3150 HWY JJ	Palmyra	Mo	BASF	Pipeline	Land	RCRA WASTE	40 gal	0.167
										Minimum =	0.0005
										Maximum =	417.0
										Mean =	31.0
										Median =	0.15
<b>Explanatory Notes:</b> (a) * USEPA OSW standardized gallons to pounds by multiplying NRC gallon quantities by the conversion factor 8.34 pounds/gallon (specific gravity of water). (b) Section 103 of CERCLA requires the "person in charge" of a facility or vessel, as soon as he or she has knowledge of a release of a hazardous substance in an amount equal to or greater than an RQ, to report the release immediately to the NRC (1-800-424-8802). (c) The USEPA defines a chemical " <b>release</b> " in the CERCLA statute (section 101(22)) as any "... <i>spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant)</i> ...."											

**Count of RCRA Hazardous Waste Spills by Year**  
**Source: National Response Center Chemical Spill Database (1990 - 2001)**



Note: based on 59 total spill incidents involving RCRA haz waste materials over this 12-year data period





National Response Center Chemical Spill “Reportable Quantities” (RQ) for RCRA Hazardous Waste F001 to F005 Spent Solvents							
Identity of Spent Solvent			RCRA hazardous wastecode (40 CFR 261 Subpart C)	Reportable quantity (RQ)			
				! final adjusted RQ, not statutory RQ ! alternative quantity equivalencies ! source: 40 CFR 302.4			
Item	Chemical name	CAS registry nr.*		Pounds	Short Tons	Kilo-grams	Gallons ***
F001 Spent Solvents (n = 6):							
1	Tetrachloroethylene	127-18-4	F001, U210	100	0.05	45.4	12
2	Trichloroethylene	79-01-6	F001, U228	100	0.05	45.4	12
3	Methylene chloride	75-09-2	F001, U080	1,000	0.5	454	120
4	1,1,1-Trichloroethane	71-55-6	F001, U226	1,000	0.5	454	120
5	Carbon tetrachloride	56-23-5	F001, D019, U211	10	0.005	4.54	1.2
6	Chlorinated fluorocarbons	Multiple CAS nrs.	Multiple RCRA codes	5,000	2.5	2,270	600
F002 Spent Solvents (n = 9):							
7	Tetrachloroethylene	127-18-4	F002, D039, U210	100	0.05	45.4	12
8	Methylene chloride	75-09-2	F002, U080	1,000	0.5	454	120
9	Trichloroethylene	79-01-6	F002, D040, U228	100	0.05	45.4	12
10	1,1,1-trichloroethane	71-55-6	F002, U226	1,000	0.5	454	120
11	Chlorobenzene	108-90-7	F002, D021, U037	100	0.05	45.4	12
12	1,1,2-trichloro- 1,2,2-trifluoroethane	76-13-1	F002	5,000	2.5	2,270	600
13	Ortho-dichlorobenzene	95-50-1	F002, U070	100	0.05	45.4	12
14	Trichlorofluoromethane	75-69-4	F002, U121	5,000	2.5	2,270	600
15	1,1,2-trichloroethane	79-00-5	F002, U227	100	0.05	45.4	12
F003 Spent Solvents (n = 9):							
16	Xylene	1330-20-7	F003, U239	1,000	0.5	454	120

17	Acetone	67-64-1	F003, U002	5,000	2.5	2,270	600
18	Ethyl acetate	141-78-6	F003, U112	5,000	2.5	2,270	600
19	Ethyl benzene	100-41-4	F003	1,000	0.5	454	120
20	Ethyl ether	60-29-7	F003, U117	100	0.05	45.4	12
21	Methyl isobutyl ketone	108-10-1	F003, U161	5,000	2.5	2,270	600
22	n-butyl alcohol	71-36-3	F003, U031	5,000	2.5	2,270	600
23	Cyclohexanone	108-94-1	F003, U057	5,000	2.5	2,270	600
24	Methanol	67-56-1	F003, U154	5,000	2.5	2,270	600
<b>F004 Spent Solvents (n = 5):</b>							
25	Ortho-cresol	95-48-7	F004, D023, D026, U052	100	0.05	45.4	12
26	Meta-cresol	108-39-4	F004, D024, D026, U052	100	0.05	45.4	12
27	Para-cresol	106-44-5	F004, D025, D026, U052	100	0.05	45.4	12
28	Cresylic acid	1319-77-3	F004, U052	100	0.05	45.4	12
29	Nitrobenzene	98-95-3	F004, D036, U169	1,000	0.5	454	120
<b>F005 Spent Solvents (n = 8):</b>							
30	Toluene	108-88-3	F005, U220	1,000	0.5	454	120
31	Methyl ethyl ketone	78-93-3	F005, D035, U159	5,000	2.5	2,270	600
32	Carbon disulfide	75-15-0	F005, P022	100	0.05	45.4	12
33	Isobutanol	78-83-1	F005, U140	5,000	2.5	2,270	600
34	Pyridine	110-86-1	F005, D038, U196	1,000	0.5	454	120
35	Benzene	71-43-2	F005, D018, U019	10	0.05	4.45	12
36	2-ethoxyethanol (ethylene glycol monoethyl ether)	110-80-5	F005, U359	1,000	0.5	454	120
37	2-nitropropane	79-46-9	F005, U171	10	0.05	4.45	12
<b>Summary Statistics:</b>							
Mean =				1,793	0.9	814	215

Median =		1,000	0.5	454	120
<p><b>Explanatory Notes:</b></p> <p>(a) * CAS = Chemical Abstracts Service of the American Chemical Society (<a href="http://www.cas.org/EO/regsys.html">http://www.cas.org/EO/regsys.html</a>).</p> <p>(b) *** OSW assigned gallon equivalencies based on multiplying RQ pounds, by the specific gravity for water of 8.34 pounds-per-gallon (as a generalizable proxy specific gravity to represent F001 to F005 liquid spent solvent wastewaters).</p> <p>(c) Section 103 of CERCLA requires the "person in charge" of a facility or vessel, as soon as he or she has knowledge of a release of a hazardous substance in an amount equal to or greater than an RQ, to report the release immediately to the NRC (1-800-424-8802).</p> <p>(d) The USEPA defined a chemical "<b>release</b>" in the CERCLA statute (section 101(22)) as any "...<i>spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant)</i>...."</p> <p>(e) A "<b>continuous release</b>" is a release that occurs without interruption or abatement or that is routine, anticipated, and intermittent and incidental to normal operations or treatment processes. There are four steps in the continuous release notification process:</p> <ol style="list-style-type: none"> <li>(1) initial telephone notification (to the NRC, SERC, and LEPC);</li> <li>(2) initial written notifications to the appropriate EPA Regional Office (within 30 days of the initial telephone notification);</li> <li>(3) follow-up written reports; and</li> <li>(4) change notifications.</li> </ol> <p>Details on the information required are in 40 CFR 302.8 (<a href="http://www.access.gpo.gov/nara/cfr">http://www.access.gpo.gov/nara/cfr</a>). For more detailed information concerning the continuous release reporting requirements, see USEPA, "Reporting Requirements for Continuous Releases of Hazardous Substances: A Guide for Facilities and Vessels on Compliance," Office of Emergency and Remedial Response, OSWER Directive 9360.7-01, Oct 1990.</p> <p>(f) For purposes of establishing RQ adjustments under CERCLA, EPA has adopted the five RQ levels of 1, 10, 100, 1,000, and 5,000 pounds originally established pursuant to CWA section 311 (40 CFR Part 117).</p>					

